THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXI. SATURDAY, AUGUST 13, 1892. No. 7.

ACUTE INFECTIOUS EPIPHYSITIS.

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DEFINITION.—Acute infectious epiphysitis is a disease peculiar to infancy and adolescence, and is due to the specific pathogenic action of one or more of the microbes of suppuration. It is a disease the etiology of which modern bacteriologic research has revealed, and which for more than a century and a half had baffled the most diligent inquiry of able scientific observers.

SYNONYMS.[1]—The disease is best known in the United States by the names of acute infectious osteomyelitis and acute infectious periostitis. Acute infectious arthritis is also applied to a special form of epiphysitis.

HISTORY.—In 1805 J. L. Petit described an acute affection of bone, which we now recognize as acute osteomyelitis. This is the first distinct mention that we have of this disease. Allusions were made to it also by Gooch, Pott, Cheselden, Hay, and Abernethy.

Bearing on this subject, M. Renaud, in 1831, published a paper "On Inflammation of the Medullary Tissue of Long Bones," and reported five cases occurring after amputation, all of which terminated fatally.

Cruveilhier refers to it as "phlebitis of bones," when suppuration supervened on amputation, and attributes to it the formation of visceral abscesses.

Jules Teilhard La Terrisse first employed the designation acute arthritis of infants in 1831, in his thesis submitted for the degree of Doctor of Medicine, to the Faculty of Medicine in Paris, in which he reported three cases in children, aged respectively three, six, and nine days. At the necropsy pus was found in each case in several of the joints, and in one case a number of abscesses were found in the lung.

Nélaton is credited by Roux as having devised the term osteomyelitis in 1834; in 1844 he published a brief account of it under the title of "Suppuration of Bone."

[1] The various synonyms used will be fully discussed in considering the history.

Mr. Stanley, in 1849, in his monograph on "Diseases of Bone," gives an accurate description of the kryptogenetic, or the then so-called spontaneous variety. Schultzenberger directed attention, in 1853, to this disease as "Rheumatoid Periostitis."

Chassaignac, having studied it in the same year, and recognizing its infectious character, gave to it the name of "Acute Infectious Osteomyelitis," and, for the first time, applied to the spontaneous variety, in 1855, the name "Osteomyelitis," and detailed four cases that came under his own observation.

In 1855 the affection was described by Becker as "Phlegmonous Periostitis." Almost at the same time Klose published an account of thirteen cases under the term "Meningo-osteo-Phlebitis." In each case there was epiphyseal separation. "Epiphyseal Ostitis of Adolescence" was the term applied to it by Gosselin, at about this time.

Gamet's thesis on this affection appeared in 1862. He entitled it "Juxta-epiphyseal Osteo-periostitis." Geraldès designated it "Phlegmonous Periostitis." V. Roser bestowed upon it the name of "Pseudo-rheumatism," on account of the number of bones involved and the frequency with which the joints were implicated. Luecke is given credit with having first called attention to its infectious character. Lannelongue gave a description of it in 1878, under the heading of "Acute Osteomyelitis of Adolescence."

Mr. T. Smith, a surgeon in St. Bartholomew's Hospital, has reported two cases of "Acute Arthritis of Infants." In his treatise on the *Disease of Joints*, Barwell describes the affection as "Peracute Articular Ostitis;" he also uses the term epiphysitis, taking his definition from Stromeyer's memoirs on *Ostitis Articular Peracute*.

From the frequent occurrence of the separation of the epiphysis from the diaphysis, Klose describes it as "Epiphysentrennung," also as "Meningo-osteo-Phlebitis." Krause called it "Acute Purulent Synovitis in Infants."

MacNamara, in the first edition of his work, speaks of "Acute Epiphysitis"; but, exception being taken to this term as applied to this disease, in the third edition he refers to it as "Suppurative Ostitis." In the work of Thomas Jones on *Diseases of Bone*, he discusses it under the subject of "Acute Osteo-myelitis and Necrosis of the Epiphyses and Articular Extremities of Bone."

NORMAL HISTOLOGY OF BONE.—Before considering the etiology or the pathology of acute infectious epiphysitis it is necessary to form a clear and comprehensive idea of this subject, that we should recognize and differentiate between the conditions existing at, and previous to, the completion of ossification, the arrangement of the vascular system, and other special anatomic and histologic peculiarities of the bones, all of which exercise a potent influence in determining pathologic conditions in these structures.

Bone is produced by a temporary cartilaginous substance being converted into medulla. This change is induced by the cartilage becoming pierced by channels or bloodvessels with but an imperfectly developed coat of soft connective tissue, as it is necessary that actual contact should take place between the blood and the cartilage-cells before further development can occur. The cartilage-cells, thus receiving an additional amount of nutriment, are stimulated to increased activity. With the further development of the bone, the periosteum and endosteum are produced, and then we have the bone growing from the cells contained in the medulla, the endosteum, and the periosteum.

The periosteum is developed by the outer layer of cartilage assuming a reticulated fibroid character, in the meshes of which are contained osteo-genetic cells, and it is by their further and continued development that the bone is increased in thickness.

The bone receives its nourishment not only from the nutrient artery, but also from innumerable small arteries that penetrate into the bone from the periosteum, being derived from arteries of adjacent structures. The arteries are distributed throughout the compact portion of the bone by the system of Haversian canals. In the cancellated structures some vessels follow along the trabeculæ, while others span across the space occupied by the soft marrow. In this situation they bear a strong resemblance to the blood-sinuses in the spleen. The sinuses are larger than the arteries that empty into them. In addition to the veins accompanying the nutrient artery, those arising in the compact tissue and those making their exit through the articular cartilage, there is a venous plexus surrounding the bone at the junction of the epiphyseal cartilage with the diaphysis, greatly facilitating the flow of the blood from this situation. The epiphyseal cartilages receive their blood-supply from the arteries of the medulla.

Continuous with the endosteum in the medullary cavity is a network of adenoid tissue, which is also found accompanying the bloodvessels in the Haversian canals. This is regarded by many authorities as the commencement of the lymphatic system in the bone. In the meshes of this structure are numerous cells both morphologically and functionally resembling the corpuscles in the spleen. The subcartilaginous layer of bone is a dense plate of compact osseous tissue, situated between the epiphysis and diaphysis. It is pierced by numerous vessels entering the epiphyseal cartilage from the shaft. From its peculiar structure it possesses great resistance to all inflammatory processes. In it there is no definite Haversian system.

The medullary substance occupies the central cavity of tubular bones, and is also continuous with the soft tissues contained between the trabeculæ in the cancellated portion of the bone. At the extremity of the diaphysis it terminates in bulbous processes, and from these numerous other processes are given off, which penetrate the subcartilaginous disc, and, uniting with one another, form arches.

ETIOLOGY.—The specific cause of acute infectious epiphysitis is not a special organism, as Becker at one time supposed, but—as determined by Krause, Garré, and Rosenbach, whose researches and observations have been substantiated by many of the more able bacteriologists of the day—this disease is produced by one or more of the varieties of pyogenic microbes the entrance of which into the circulation is usually effected through some abrasion of the skin, or, less frequently, through the mucous membrane of the respiratory or alimentary tracts; a decayed tooth, or any suppurating inflammatory focus, however small, may be a *portio invasionis*. The organisms have, apparently, a predilection for the long bones, and more frequently attack the one extremity, that from which the development of the bone is principally accomplished, *e. g.* the lower epiphysis of the femur and the upper epiphysis of the tibia.

The short and flat bones are not exempt from the process, and that they are not frequently involved may be ascribed to the fact that their position and function render them less liable to injury, and that the evolving changes in their development are not of such an active character as we have observed in the long bones.

The selective affinity of the microbes for one or the other extremity of a bone, or for any particular class of bones, is not incomprehensible when we study the anatomic structures. We discover that in the medullary tissue, in proximity to the epiphyseal cartilage, where the transitional changes and the vascular supply attain their maximum, and where the blood-pressure and velocity are at a minimum, where the capillaries are mere excavations, sinuses, or have but an imperfectly developed wall, we have all the conditions most favorable for the localization and multiplication of microorganisms, the pathogenic action of which is in health counteracted by the inherent vital resistance of the cells.

Roswell Park asserts that the marrow is "predisposed to collect and retain germs, and that it is most sensitive in its reaction"; from its constitution it also affords a soil that is particularly adapted for their nourishment and proliferation.

As early as 1874, Klebs, Recklinghausen, and others, discovered the presence of cocci in the bodies of patients dying of acute infectious epiphysitis, Pasteur found micrococci, and in 1881 Schüller amputated a limb, and found the same organisms in the bone, periosteum, and articular cartilages. In the same year Rosenbach cultivated from one case the staphylococcus aureus and albus, from another the staphylococcus albus alone, and from a third the staphylococcus aureus and the streptococcus pyogenes. He also produced the disease in animals by injecting the pus from a furuncle, after subcutaneously fracturing the bone, and with the pus from osteomyelitis produced in the subcutaneous tissues a furuncle.

Becker, in 1883, made most careful and extended observations, and thought that he had discovered the specific microbe of osteomyelitis. Rodet has produced osteo-myelitis by the intravenous injection of cultures of the staphylococci, and without fracturing or otherwise injuring the bones; this, however, was possible only by intravenous injection, never in his hands by the mere introduction into the subcutaneous connective tissues. Krause, in 1884, cultivated from the pus the staphylococcus aureus and albus, and found the same organisms in effusions about the joints.

Subsequently, he produced the disease in animals by injecting pure cultures of these cocci, and making subcutaneous fractures.. Garré corroborated the experiments of Krause, and also discovered the staphylococcus in the blood. Krause observed lesions in the muscles, kidneys, and other organs identical with those found in pyemia.

Kocher experimented by injecting foul and putrid material into animals, and was sometimes successful in producing the disease. His failure in the other cases was probably due to the fact, that the substances injected contained none of the pyogenic organisms.

In children that have inherited constitutional taints, as those of tuberculous and syphilitic parents, the resistance to the action of pyogenic organisms is much diminished, so that we find that they are predisposed to osteomyelitis, as also are those that have, or are convalescing from, any of the acute infectious or exanthematous diseases. Thus, T. Holmes, in *The Surgical Treatment of Diseases of Infancy and Childhood*, reports the case of an infant but seven months old, in which suppuration of the hip-joint succeeded an attack of chicken-pox.

Dr. K. McLeod's case of epiphysitis, reported in the *Indian Medical Gazette* for 1883, was attributed to variola. Leucke, Keen, and Renne have demonstrated, and as experience and history of the cases confirm their conclusion, it may be received as a truth, that the specific poisons of diphtheria, typhoid fever, scarlatina, measles, rubeola, and variola, prepare the medullary tissues for the reception of the pyogenic germs.

An influential rôle is assigned to exposure to cold and damp as a predisposing factor, and as the exceeding activity of the tissue-changes in growing bone involves an instability, any sudden change tending to disturb the equilibrium of the circulation will create the conditions necessary for the inception of osteomyelitis. Professor Senn avers to have repeatedly observed cases of osteomyelitis in boys, who, after active and exciting exercise, have plunged in cold water or have stretched themselves out upon the cold ground to rest.

PATHOLOGY.—There are three situations that, according to Howard Marsh, furnish a ready nidus for the localization of microbes, as follows:

"Immediately subjacent to the cartilaginous disc; in the vicinity of the ossifying center; in the line of union between the epiphysis and diaphysis."

Their localization in the diaphyseal side of the epiphyseal cartilage, as in the soft tissues, determines an inflammation in which we may observe the same tissue-changes that occur in other structures subjected to the action of these organisms.

There is at first an increased supply of nutrient, quickly followed by a rapid multiplication of the nuclei of the fixed cells.

These cells surround themselves with a layer of granular material, and the whole is encased within a shell of earthy matter, supposed to be elaborated by the nucleus. A poor and lowly organized form of bone is thus produced. This is the analogue of the granulation-tissue found in other structures of the body. The cells, as a result of their rapid proliferation and the unyielding character of the osseous tissue, are crowded together to such an extent that their development is materially interfered with; consequently they offer but feeble resistance to the action of the germs and their ptomaïnes.

When the epiphyseal cartilage is primarily affected, the nuclei of the cells undergo rapid division and subdivision, forming masses of cells, and these conglomerations, the progeny of the cartilage-cells, becoming permeated by bloodvessels, are converted into medulla, which may continue to develop until it reaches the surface of the articular cartilage, and then we have what is frequently described as an articular ulcer. The process may also extend in the other direction, and communicate with the medullary cavity. Subsequently, we shall have a

sinus formed, and an open passageway for the pus between the interior of the joint and the medullary canals.

We perceive that the tissues adjacent to the inflammatory focus are saturated with the transuded serum of the blood, and there are present numerous leukocytes that have migrated from the vessels. We discover, also, that the tissues are stained. This is attributable, not to the presence of serum and leukocytes, but to the hematin that is liberated as the result of the injury sustained by the capillaries, diapedesis supervening, and the red corpuscles having undergone disintegration.

The compact portion does not escape, for we find that the lacunar corpuscles undergo a granular degeneration, and the bone, dependent upon the corpuscles for nutrition and repair, degenerates. Several of the spaces coalescing, a cavity is formed, which ultimately opens into an adjoining medullary space. The shape of this cavity corresponds with the original growth of the lacunar system, thus assuming a more or less circular form. The canaliculi are also filled with this granular material, as are the Haversian canals. This granular substance resembles highly vascularized granulation-tissue. Absorption of the walls of the Haversian canals is the natural sequence of this process. The canals are in consequence greatly increased in diameter, and rarefaction of the bone is effected. The vessels, not being permitted to contract, remain patulous, thereby facilitating the entrance of microörganisms and their toxines into the circulation.

The veins also participate in the inflammatory process, and we have established a phlebitis, with the formation of infected thrombi. Subsequently, portions of these thrombi become detached and washed into the circulation, and are arrested in some of the viscera. At the site of these infected embolic infarcts we have founded new foci of inflammation, and metastatic abscesses are thus engendered.

One of the peculiar features of osteomyelitis is the local or pyemic condition in the bone, and this is beautifully illustrated in the case here reported (see illustration), in which there were several metastatic abscesses in the medullary substance.

Diastasis is the result of localization of the germs at the juncture of the diaphysis and the epiphysis, or when the integrity of the bone is destroyed by extension of the inflammation.

HISTORY OF THE CASE.—In reporting the history of this case, it has not been deemed necessary to go fully into the symptoms, but only to bring out the more important features, which make it differ slightly from other cases reported in the current literature on this subject. The symptoms of this disease have been so fully gone into by the various writers who have considered it, that it is not deemed at all necessary to present an elaborate history, which would, in many points, be but a repetition of well-known and well-established facts.

In the first place, the case was rather peculiar in that the child was thirteen years of age, and that the symptoms had never been active in early life. From the time when she began to walk she had complained of pains in the tibia, occurring more frequently at night, and often preventing sleep. There had been slight swelling, at about four years of age, situated just externally to the tubercle of the tibia, but this had subsided, and had given rise to no symptoms. About one year previously to the time when first seen she had received an injury, caused by a flat-iron falling on the metatarsal bone of the great toe. This had been followed by severe inflammation and the development of a small abscess, which was opened at the time. Some small fragments of bone were removed, and the cavity was freely drained. The wound healed without any apparent difficulty. The pain in the tibia, which had annoyed her for years, became more intense; her general health failed; she lost flesh; her appetite disappeared; and, from a bright, cheerful child, she became morose, disinclined to play, and showed other well-marked symptoms of diminished physical activity. Six weeks before the time when she was first seen there developed points of intense tenderness, situated immediately above and below the knee-joint, and the family states that these points were slightly soft. This was followed in about ten days by symptoms of active inflammation in the knee-joint.

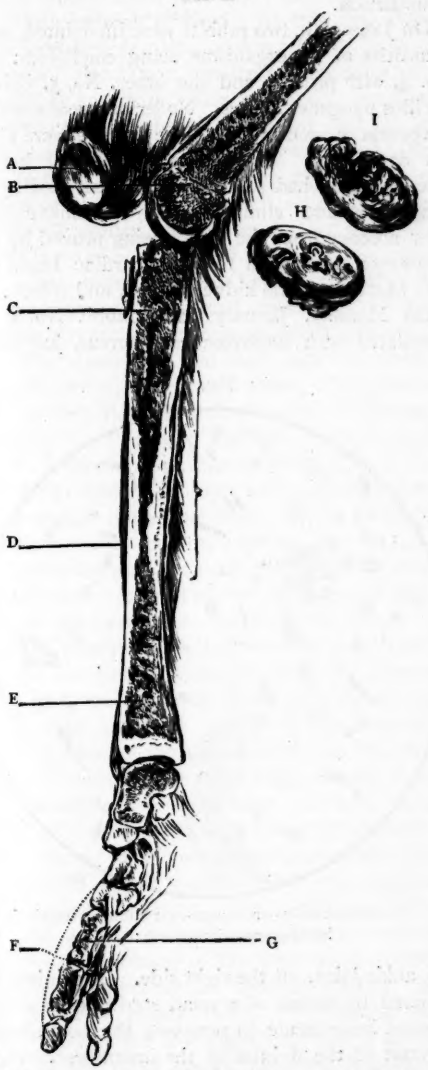
The entire crest of the tibia was painful and tender to the touch; there was some enlargement of the lower extremity of the bone; there was fever; several distinct chills occurred, followed by sweats and extreme weakness. The emaciation increased; sleep became impossible, except after the administration of opiates to lull the pain in the infected joint and quiet the nervous system. The symptoms did not seem to respond to any local or systematic treatment, and six weeks after their beginning she first came under our observation.

The physician who had attended the case diagnosticated the condition as one of white swelling, and had so treated it. She was seen by Dr. Allis, Dr. Hearn, and Dr. Coplin, and after a careful study of the case the diagnosis of infectious epiphysitis was made, and an exploratory operation was decided upon. When the knee-joint was opened, the enormous extent of the pathologic process seemed to demand the amputation of the limb, and after gaining the consent of the parents this was done. The accompanying illustration shows the extensive infiltration of the bones affected. There was the "flail joint," and the development of other well-marked

symptoms which are usually associated with the disease.

After amputation the girl rapidly recovered.

FIG. 1.



A. Patella turned backward and to one side, showing its lower surface.

B. The lower extremity of the femur, showing the line of the epiphysis and a distinct border of fatty degeneration just where the epiphysis joins the shaft. In the lower extremity of the femur are several small round or irregular dots that mark the position of metastatic abscesses in the bone. The periosteum of the femur is slightly thickened just above the epiphyseal line. The epiphysis is normal.

C, D, E. Sawn section of the tibia, showing the condition of its medullary canal; at the upper extremity of the tibia the shaft terminates in a jagged, irregular extremity that has been in apposition with the epiphysis. The epiphysis is placed over on one side at H, with a view of the upper surface, while at I the view is that of its under surface. Just above the line that leads from C are two metastatic abscesses of considerable size; below this line, and extending to the line D, is to be noted the detachment of the periosteum. The periosteum is much thickened, the thickening fading off as the line E is approached. At C the bone-marrow was intensely red and congested, and there were no less than a dozen small abscess-cavities not quite as large as split peas. The external compact portion of the bone is much thickened, and just opposite the pointer there is considerable swelling along the line of the periosteum. The lower epiphysis of the tibia does not show well; at the lower extremity of the shaft, however, can be seen several small abscess-cavities. The point G is the seat of the original injury. F marks the metatarso-phalangeal articulation, the lower extremity of which should be placed to the upper extremity, as that represents the sawn section of the bone of the great toe. The great toe is also shown.

H is a view of the superior surface of the epiphysis of the tibia, the articular surface. In it there will be observed not less than five or six small openings that communicate with the abscess below and with the joint above. In some of them small fragments of necrotic bone are to be observed. The cartilaginous structures of the joint are also entirely destroyed, and the articular margins of the epiphysis show a slight fragment of the two semi-lunar cartilages.

I is the same as H, except that it is a view of the inferior surface where it came in contact with the tibia. It will be observed that in the epiphysis there is nothing more or less than an abscess-cavity, the wall of which is formed by a hard cancellated layer of bone and by the articular disc. There was no periosteum continuous with the shaft and epiphysis, and hence the epiphysis moved freely upon the end of the shaft, thus giving the well-known "flail joint" so characteristic of epiphysitis. The interior of the knee contained a considerable quantity of pus, and the synovial structures were also disorganized.

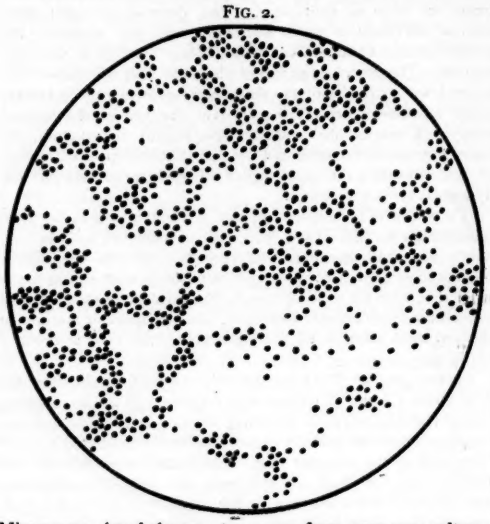
LABORATORY.—The tubes inoculated from the pus immediately surrounding the joint were, by plating and carrying the cultures rapidly through several generations, proven to contain the following organisms: The staphylococcus pyogenes aureus; the staphylococcus pyogenes albus; the bacillus pyogenes fetidus; the proteus mirabilis.

EXPERIMENTAL PATHOLOGY.—Rabbit No. 1 was injected at 5 P.M. with a culture of the staphylococcus aureus of the first generation. It remained apparently perfectly well until the day following, when it appeared rather weaker than usual. Its eyes were dull; it ate but little food; and it seemed inclined to doze a greater portion of the time. When seen later in the day, it was extremely restless; prostration was marked; and there was an inability to coördinate muscular movements. Respiration was shallow, quickened, and irregular; the heart was quick, weak, and the rhythm altered. During the latter part of the day it had refused to eat and associate with other rabbits. It sought a corner of the cage, where it remained, and was found on the next morning, dead. On post-mortem examination, no microscopic lesions were observed. Death had resulted from septicemia; tubes cultivated from the blood showed growths of the staphylococcus aureus. This was confirmed by microscopic examination.

Rabbit No. 2 was injected at 8 A.M., June 17th, with the staphylococcus albus of the first generation.

The first symptoms noted manifested themselves on the following day, at 2 o'clock. When offered food, the animal refused to eat, and the same symptoms succeeded that were observed in the preceding case,

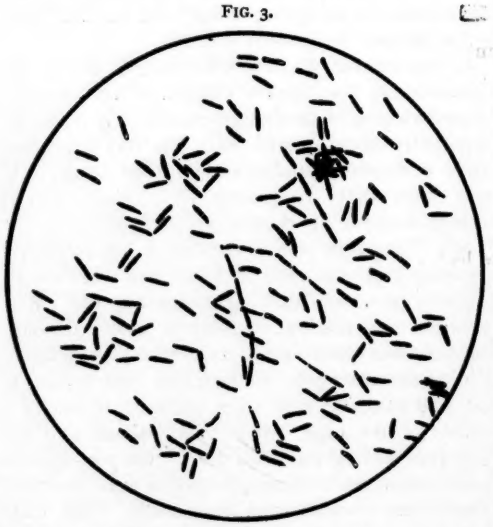
FIG. 2.



Micrococcus (staphylococcus) aureus—from agar-agar culture; Beck's $\frac{1}{12}$ homogeneous immersion; Oc. 2.

although the animal did not so readily yield to the influence of the microbes, not dying until the evening of the 20th. Cultures of the blood and urine showed growths of staphylococcus albus.

FIG. 3.



Bacillus pyogenes fetidus—from agar-agar culture; Beck's $\frac{1}{12}$ homogeneous immersion; Oc. 2.

Rabbit No. 3 was inoculated on the evening of June 24th with a mixture of the aureus and albus. It died on June 26th, at 3 o'clock, with the symptoms of an intense septic infection. In tubes inoculated a growth of the two cocci developed, as was proven by plating, staining, and microscopic examination.

On June 26th, two rabbits were inoculuted, small quantities of the organisms being employed; one, No. 4, with proteus, and the other, No. 5, with the bacillus pyogenes fetidus. No lesions were observed at the seat of inoculation. The animals were killed ten days later. There were no internal lesions. The organisms had probably been destroyed by the phagocytes and eliminated by the emunctories; their absence from the blood being proved by culture-experiments with the intra-cardiac blood and with blood from the kidneys, liver, and spleen.

On Monday, January 12th, rabbit No. 6 was inoculated with staphylococcus aureus, just above

FIG. 4.

Proteus mirabilis—from agar-agar culture; Beck's $\frac{1}{12}$ homogeneous immersion; Oc. 2.

the ankle-joint, on the right side. The injury was inflicted by means of a small sterilized gimlet, an attempt being made to puncture the bone, but on account of the dulness of the instrument, and the extreme hardness of the bone, the periosteum alone was injured, the seat of the injury being as near to the epiphyseal line as could be made, without having previously ascertained its location. The injury to the bone, as well as the injection of the micro-örganisms, was effected with the strictest antiseptic precautions, care being taken that the point of the puncture through the skin should not be located immediately above the point of injury of the bone, the point of inoculation being fully one inch below the point of injury.

On the day following the treatment, the rabbit

was dull; it did not eat. At the seat of inoculation was a small point of tenderness, with a distinct area of inflammatory redness. This small point of redness developed slowly into an abscess, requiring nearly a whole week to attain sufficient size to render the diagnosis positive. At this time there were well-marked constitutional symptoms, such as severe rigors, emaciation, weakness, staggering gait, and inability to stand. This condition continued for about five days, when it was noted that the injured limb had rotated directly backward, the plantar surface of the foot being upward; there was well-developed "flail joint"; the limb was considerably swollen, the abscess having evidently extended up the middle third of the femur. The rabbit at this time seemed to have improved in its physical condition; it evinced a desire to eat, and would also run around the cage in which it was confined. The emaciation did not seem to lessen; neither did the rigors entirely cease. The abscess seemed to have diminished in size, but the general usefulness of the limb did not seem to improve in the least; it was limp and useless to the animal.

The animal died on February 12th, and the following post-mortem notes were made: It was evidently emaciated to the last degree. Before any incisions were made in the skin, the condition of the limb was noted as follows: Instead of any well-marked articulation at the knee-joint, the limb was found to move in all possible directions, and crepitus could readily be obtained. What had been the abscess now seemed doughy and firm, and pitted on pressure. The skin was very carefully dissected from over the seat of the abscess, after which this was opened. The cavity was filled with a cheesy material, which emitted a sweetish odor. It was too thick to flow, and contained large flocculi, evidently necrotic tissue. The knee-joint was entirely disorganized; its capsule was destroyed; the articular cartilages were necrotic; the epiphysis of the femur was separated, and divided into minute fragments, the extremity of the bone being eroded, irregular, and the periosteum removed from its surface as far as the middle third. The abscess had infiltrated the muscle to a slight extent, and in the inguinal region there was an enlarged lymphatic gland, about the size of a shell-bark. The other joints were found perfectly healthy.

The heart was the seat of a slight pericarditis, as shown by the small quantity of flocculent lymph found in the pericardium, also attached to the visceral and parietal layers. This all washed off, and did not seem adherent. The pleura was normal, the lungs thoroughly collapsed, and the seat of several spots of petechial redness; they did not seem to be the seat of any abscesses, and crepitated at all points.

The liver showed marked swelling; its borders were not so sharp and smooth as usual; upon its surface were several distinct creamy white spots, about as large as the head of an ordinary pin; these seemed at first to be on the surface of the liver, but closer examination showed that they were beneath the capsule, and in the liver-tissue itself. The liver was very friable, and granular in appearance; it also seemed to lack the usual intensely red color found in most rabbits. On section, several spots, identical with those beneath the capsule, could be seen; some of these were removed for microscopic examination. The bile was light in color, and did not stain.

The kidneys were apparently swollen, and their capsule tense; after section, the cut surface could not be placed smoothly together. Along the cortex there were striated lines of congestion, many of them extending far down toward the pelvis of the organ. There were several distinctly white spots of extremely small size, which it was thought might be minute abscesses. To ascertain this, small pieces of the organ were removed for microscopic examination. The organ had no urinary odor, and the urine in the bladder seemed normal.

The other abdominal organs were healthy, except that the spleen was swollen and friable; the peritoneum seemed dryer than usual, and its surface did not look glistening, although no other evidence of inflammation could be detected. There was no apparent enlargement of the mesenteric glands; the retroperitoneal glands were enlarged, and a few had undergone suppuration and caseous formation in their interstices. The general muscular system and joints, other than already noted, were carefully examined, but no evidence of infection could be found.

A microscopic examination of the liver and kidney is appended.

The liver showed numerous thrombotic blood-vessels, and into the perivascular structures and the intercellular spaces rhexis had taken place; the leukocytes had emigrated, and were present in large number. The vessels radiating from the hepatic veins showed stasis, and in points the entire vascular apparatus of the lobule was plugged. The liver-cells were granular, their nuclei not staining. Many of the thrombi were the seat of beginning abscess-formation, as indicated by the young-cell exudate and mycotic invasion. The liver-cells showed the usual changes due to hyperpyrexia; they were granular, stained poorly, and in no small number neither nuclei nor nucleoli were visible; the epithelium of the bile-ducts was not altered.

After staining, so as to bring into relief the organisms, if any were present, the examination was con-

tinued with high powers: everywhere in the blood-vessels, perivascular and intercellular spaces, were hosts of microbes; and, what was peculiarly characteristic, mural implantation had occurred and colonies of organisms could be demonstrated within the walls of the hepatic vessels. There appeared to be present bacilli, for which we could not account; but Professor Longstreth expressed an opinion that they were refraction-lines. Staphylococci were present in abundance, and even a casual observer could not fail to note how thoroughly disseminated through the textures they were.

The kidneys, with low powers, showed infarcts, with areas of hemorrhagic extravasation. Small round cells were present in abundance in and about these areas, indicating inflammation and beginning abscess-formation. The epithelium of the tubes was granular, and degenerating in the highest degree. Indeed, few points were visible in which any of the histologic structures were normal. Many of these changes, like those in the liver, might be attributed to the high temperature. Many of the vasa recta were thrombotic.

With high powers, organisms were found in all portions of the kidney, and especially in and around the thrombi. Some of these microbes could be observed in the interior of the round cellular elements. There were also present rod-shaped bodies, resembling those found in the liver, for which the same explanation is offered as that already given. It is also to be remembered that cocci situated in the interstices of tissues may be stained, and look very much like rod-shaped bodies. This observation is borne out by the fact that by no amount of plating could aught but cocci be cultivated.

REMARKS. — There is no specific microbe of epiphysitis or osteomyelitis. The two are practically the same disease—that is, when the latter occurs in adolescence, due to the same organisms, and differing only in the primary site of localization of the germs.

The order of frequency with which the germs are found is as follows: Staphylococcus aureus, staphylococcus albus, staphylococcus citreus, and rarely the streptococcus pyogenes. Unless dependent upon some anomalous condition, epiphysitis never occurs after the completion of ossification, the peculiar construction of the parts and the distribution of the vessels being necessary and essential elements in its causation.

It is of interest to note, that in the effusion into the tissues, the advance-line of mycotic invasion, saprophytes were not present; neither could they be found in the metastatic abscess in the tibia, nor could any effect be observed by injecting them into healthy tissues of rabbits in quantities insufficient to produce death.

In considering the foregoing fact, it may be confidently asserted that the coëxistence of the bacillus pyogenes fetidus and proteus in the pus, was due not to primary, but to secondary infection. The staphylocci constitute the essential exciting cause of this affection, and they prepare the tissues for the reception of saprophytes. The toxines produced by the saphrophytes increase the danger of septic poisoning.

The staphylococcus aureus excites a more active inflammation than does the staphylococcus albus, and the staphylococcus albus is more active than the staphylococcus citreus, and a mixed infection, especially of the staphylococcus aureus and staphylococcus albus, is the most virulent of all. These facts may be explained by attributing to each variety of microbe the capability of engendering a ptomaïne peculiar to itself. As the result of chemical action from the presence of two such compounds in the tissue, another compound is formed, which, though not differing essentially in its action, acts upon the cell-protoplasm with greater intensity; or the hypothesis may be advanced that the amount of ptomaïnes generated by an organism is not dependent upon the number, but upon the quantity of the material supplied that it can utilize as food. Hence, it may be assumed that there are present in a part substances that are unaffected or cannot be assimilated by one organism, which to another will serve as an excellent pabulum, and from which the organism will elaborate its peculiar ptomaïne. Therefore, it is evident that if this be the case, we shall have in a given amount of material a greater production of ptomaïnes in mixed infection.

Localization of the organisms is determined by any condition that lowers the inherent vitality or physiologic resistance of the cells, or by any circumstances that disturb the equilibrium of the circulation, as pointed out in considering the etiology. In the case reported by Rosenbach, in which a child was born suffering with infectious epiphysitis, the mother showed no sign of disease; and in a similar case, personally related by Dr. Joseph Hearn, in which he operated upon a child but three weeks of age, suffering with a peri-articular abscess, the little patient, with the exception of a small sinus, which occasionally discharges a little pus, is apparently perfectly healthy.

A pyemic condition of the bone is a constant attendant upon acute infectious epiphysitis, and if the disease is allowed to progress unchecked, a general pyemia invariably ensues.

In the illustration the number of apertures communicating through the epiphyseal cartilage with the cavity of the abscess, and with that of the joint, will be noted.

BIBLIOGRAPHY.

Annual of the Universal Medical Sciences, 1890, vol. iv, L.
Ashhurst: International Encyclopedia of Surgery.
Billroth's Surgical Pathology.
Macnamara, C.: Diseases of Bone.
Cornil and *Ranvier's* Pathological Histology.
Crookshank: Manual of Bacteriology, 1891.
—— Practical Bacteriology, 1886.
Flügge: Microörganisms. (Sydenham.)
Frey: Histology and Histo-chemistry of Man.
Friedländer: Use of the Microscope in Clinical and Pathological Examinations.
Gray: Anatomy.
Green: Pathology and Morbid Anatomy.
Griffiths: Microörganisms.
Gross: System of Surgery, vol. i.
Heitzmann: Microscopical Morphology of the Animal Body.
Nueppe: Methods of Bacteriological Investigations.
Marsh: Diseases of Joints.
Keating: Cyclopedia of Diseases of Children, vol. iii.
Klein: Microörganisms and Disease.
Leidy: Anatomy.
MacAllister: Text-book of Human Anatomy.
THE MEDICAL NEWS, vol. xlv, p. 290.
Miller: Practical Microscopy.
Ranney: Lectures on Nervous Diseases.
Park, Roswell: "A Study of Acute Infectious Processes in Bone," Am. Journ. of Med. Sci., July, 1889.
Seiler: Microscopical Technology.
Senn: Principles of Surgery.
—— Surgical Bacteriology,
Salomonsen: Bacteriological Technology.
Stricker: A Manual of Histology.
Treves: A Manual of Surgery, vol. ii.
Woodhead and *Hare:* Pathological Mycology.
Townsend: "Acute Arthritis of Infants," American Journal of the Medical Sciences, January, 1890.
Ziegler: Text-book of Pathological Anatomy and Pathogenesis. MacAllister's translation. German edition, 1890.

MECKEL'S DIVERTICULUM AS A CAUSE OF INTESTINAL OBSTRUCTION.[1]

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SOME three years ago it was my good fortune to operate successfully upon a case of intestinal obstruction caused by Meckel's diverticulum. The rarity of operations of this sort, together with the favorable result, has given the case added interest to me, and has led me to give the subject some consideration. Before entering upon a general discussion of the subject a short review of the case in question may prove of interest:

The patient, A. A., was a laborer, thirty-four years of age, of excellent health, his only sickness having been an attack of typhoid fever in 1876. Since that time his bowels have been regular, and he has been well. On the night of August 22, 1889, he was seized with intense pain in the abdomen. On the following morning his wife gave him senna tea, and he had a stool on the same day, and daily from that time until the night of August 29th. During this period he was perfectly well, and performed hard labor. On the night of August 29th he was seized with severe pain and vomiting. On the following morning a physician gave him a hypodermatic injection of a quarter of a grain of morphine and an enema of three quarts of water. The latter came away without fecal substance. On August 31st I saw the patient with my friend Dr. Krause. The patient had no fever; his pulse was slow, but not strong. The abdomen was distended, especially in the epigastric region. The whole abdomen was tympanitic, except to the right side of the right mammary line. I could detect the presence of free fluid in the abdominal cavity; no induration could be felt. Twice during the day the patient received an enema of three quarts of water, which returned clear. At 4 P.M. I washed out the stomach, and obtained water discolored by food, but without odor. Immediately afterward I performed laparotomy by a median incision below the umbilicus, and found the small intestine largely distended; a considerable amount of free, amber-colored fluid escaped from the abdominal cavity. A band was found extending from the region of the cecum to a point one and a half inches to the right and below the umbilicus. A coil of small intestine was twisted about this band, and constricted. The division of the band between two ligatures relieved the constricted gut. Further examination showed the cause of constriction to be a Meckel's diverticulum, perhaps four or five inches in length, in part patent, but terminating in a fibrous band. The abdomen was washed out and closed. The patient endured the operation well. After being returned to the ward he vomited a brownish material of distinctly stercoraceous odor. At 8 P.M. his condition was good; on the same night he passed flatus. He made an uninterrupted recovery. The patient was up and about on September 24th, and is now doing hard labor, having been entirely well since the operation.

In a discussion of the subject, it may be well to say a few words concerning the origin, location, form, etc., of Meckel's diverticulum. As is well known, it is the remains of the omphalo-mesenteric or vitelline duct, extending from the lower portion of the ileum through the umbilicus to the yolk or umbilical vesicle. Usually with the development of the fetus this structure atrophies and entirely disappears. Its origin is from the lower portion of the ileum. In the cases that I have examined its location has been from fifteen inches to three feet above the ileo-cecal valve; its form is various. The diverticulum may resemble a small intestine, ending like the finger of a glove, hanging free into the abdominal cavity, and having nearly the diameter of the gut itself. The opening

[1] Read before the Cincinnati Meeting of the Ohio State Medical Society, May 5, 1892.

in the gut caused by the diverticulum may vary from nearly the diameter of the gut itself to one that is very small. The diverticulum may be patent for only a short distance, or throughout its entire length, conveying fecal material to the umbilicus, and there forming a fecal fistula, or the lumen may be wholly obliterated, and the diverticulum be reduced to a simple fibrous band. At times the diverticulum is attached directly to the umbilicus or to the anterior abdominal wall. It is supposed that it may float freely in the abdominal cavity, and by chance become adherent to any part. The most common point of adhesion, as I have observed it, has been to the mesentery, in the vicinity of the origin of the diverticulum; but there are cases recorded in which it has been adherent to the posterior part of the pelvis and to the internal inguinal ring, and to the fundus of the bladder.

As to its frequency, among 3400 recorded post-mortem examinations at St. Bartholomew's Hospital, in London, it was found to be present twenty-seven times, or once in every 126. In an interesting article by Dr. Durham, in Quain's Dictionary, it is related that among 1839 cases of intestinal obstruction, seventy-five cases were found to be due to Meckel's diverticulum, or one in every twenty-four and a half cases. My own study of pathologic specimens has awakened in my mind the question whether or not more deaths ascribed to intestinal bands are not due to Meckel's diverticulum than was formerly supposed. My reason for this is that in some pathologic collections that I have studied some of the older specimens, without complete history, have simply been recorded as "obstructions due to the presence of an intestinal band," whereas in later cataloguing the curator has viewed these as probable specimens of Meckel's diverticulum, although the location of the constriction was not originally recorded in the description of the specimen. If this is true of some museums that have been most carefully arranged I feel confident that in many cases that have simply been recorded as the result of constricting bands the origin of the band has been in the omphalo-mesenteric duct.

When last in London my attention was called to the collection of specimens of Meckel's diverticulum in the museums of St. Bartholomew's Hospital and the Royal College of Surgeons, by my friend, Mr. Frederick S. Eve, through whose kindness and that of Mr. Edgar E. Willett, Curator of St. Bartholomew's Museum, I was enabled to study these specimens. Though I have carefully recorded and tabulated my observation of the specimens, together with the history as given in the catalogues, it would be impossible to produce in this paper more than a few conclusions arrived at therefrom. In St. Bartholomew's Museum are seventeen cases of diverticula; eight are without a full history; of nine the history is complete. Of these nine all died as the result of the diverticulum. Only one of them had been operated on, and in this perforation of the gut had taken place before operation. In the Royal College of Surgeons are four specimens, all of which had caused death. One of the patients had been operated on, but the cause of the obstruction was not discovered until the post-mortem examination. In all of the cases in which the history has been recorded the part of the gut constricted was the small intestine, and in most of them it was stated that it was the lower portion of the ileum. The longest time during which a patient had lived after the appearance of the symptoms of obstruction had been nine days; the shortest was thirty-six hours; the average was from three to four days.

Deaths from Meckel's diverticulum usually occur in youth or in early adult life. The youngest case that I have found recorded was in an infant, two years of age; the oldest in an adult of sixty years. The diverticulum is said to be present four times more frequently in males than in females.

Though I have looked up a large number of cases gathered in the literature of medicine, together with their history, it seems that tabulation would give uncertain results, since all cases are not discovered and reported, and many are inaccurately observed.

The symptoms of intestinal obstruction dependent upon Meckel's diverticulum are very similar to those of volvulus occurring in the lower portion of the ileum. There is pain, the location of which is not sufficiently definite to be distinctive, together with vomiting and obstipation. Treves states that if obstruction be complete, the pain is continuous, whereas, if pain is not constant, it is an indication that the obstruction is not complete. This may be a general truth, but I have seen cases in which intestinal obstruction has been complete, which for days have been free from pain, although not under the influence of an anodyne.

The diagnosis of obstruction due to Meckel's diverticulum must of necessity be rare, but there are certain considerations that would lead the surgeon to consider it among the possible causes of such obstruction. Obstruction due to Meckel's diverticulum, as has been said, is usually confined to the lower portion of the ileum, and, as is well known, the vomiting induced does not ordinarily occur so early, or with such severity, as when the constriction is higher up in the small intestine. At the beginning of the obstruction, in a patient with moderately thin abdominal walls, there may be found a local prominence in the region of the cecum. As tympanites becomes general, the distention of the abdomen will render this prominence imperceptible, but it is an important observation, and the recorded experience

of many others, that occlusion of the bowels in the region of the cecum causes distention of the central portion of the abdomen, and in the early stage more particularly in the epigastric region. In this way occlusion of the small intestine in the well-observed cases may generally be distinguished from occlusion of the colon, as the latter produces correspondingly greater fulness of the flanks. One may further distinguish between the two by means of enemata; if enemata be given, and especially if they render the region of the ascending colon dull, one can, with fair probability, at least, exclude the presence of obstruction in the large intestine. The fact becomes more apparent when we consider that sudden stoppage of the large intestine low down is commonly due to volvulous in the region of the sigmoid flexure, so that the presence of this condition could be excluded by means of enemata.

Intussusception, appendicitis, malignant growth, and fecal obstruction can, as a rule, be distinguished from any sudden closure of the lower portion of the ileum. It is not infrequently, too, that a Meckel's diverticulum may cause repeated attacks of partial obstruction, and repetition of such attacks would suggest this as their cause.

There is one point in diagnosis that I have repeatedly observed, although I have not seen it mentioned elsewhere, and which may, I believe, be an aid both in the diagnosis and in operation upon cases of intestinal obstruction, due to whatever cause; that is, the presence of free fluid in the abdominal cavity. I have repeatedly encountered it in appendicitis, strangulated hernia, and intestinal obobstruction, particularly in the two latter conditions.

When I find symptoms of intestinal obstruction, together with the presence of free fluid in the abdominal cavity, I have come to consider it a strong argument in favor of operation as affording the only chance of relief, and this fluid seems also to me to improve the chances of the operation. I have seen cases of intestinal obstruction in which at an earlier stage I was able to diagnosticate the presence of free fluid in the abdominal cavity, and as the case progressed and grew more hopeless, either at the autopsy or at operation, I have found that this fluid had disappeared. When it is present as a result of constriction of the bowel, it increases the hope that this constriction has not yet reached a point at which so serious damage has been produced as necessarily to prove fatal. This fluid, in my observation, tends to decrease as extensive adhesions due to advancing inflammation take place. Care must be taken to distinguish between free fluid in the abdominal cavity and fluid in the intestines, which may fall from one side to the other by change of position, as I have seen it occur, and have been able to demonstrate at the post-mortem. In operating for intestinal obstruction, if my suspicion is correct that it is more frequently due to the remains of the omphalo-mesenteric duct than is commonly supposed, since the clinical evidence is that this obstruction is located near the cecum, the danger of its being overlooked as a cause of obstruction will be decreased, and the operator will perhaps find with greater rapidity the cause of the difficulty.

When obstruction of the bowels takes place, and the small intestine becomes greatly distended, it is with the greatest difficulty that the bowel can be examined, unless it be permitted to escape from the abdominal cavity. This escape always adds to the difficulty of the operation, especially when the abdomen is tense, and to the danger of the patient. The prevention of the escape of the intestine has, in a series of reported cases, resulted in the cause of the obstruction of the bowel remaining undiscovered, and the death of the patient. All who have operated repeatedly for abdominal obstruction know with what difficulty distended intestines can be returned to the abdominal cavity, unless the gas be removed, and the shock and danger to which the return of the intestine or the removal of the gas subjects the patient. If the surgeon proceeds at once to examine for the possible presence of a Meckel's diverticulum, beginning with the cecum, extending his search upward, it is a matter of but a moment to ascertain whether a Meckel's diverticulum be present or not. He thus avoids the loss of much time and the large escape of the intestines resulting from a less systematic search.

Possibly the median incision is the best. When the diverticulum is found it should be divided between two ligatures, since it must be remembered that the diverticulum is often patent, and might discharge fecal matter into the abdominal cavity. Though the intestine that is constricted may be very seriously decreased in caliber, it must be remembered that this does not necessarily prevent a subsequent return to its normal capacity, and great care must be taken to distinguish between the intestine that is temporarily reduced in caliber through constriction and one that is permanently narrowed by organic changes. On account of the serious condition of patients with intestinal obstruction when operated on, it is probably best to content oneself with a division of the constricting band, and not to attempt its resection.

Though there are many points that have received but brief mention, the time at our disposal will not admit of their further elaboration, and the object of this paper will have been secured if it directs the attention of operators more specifically to Meckel's diverticulum as a cause of intestinal obstruction,

and thus enables them more quickly and more easily to recognize and overcome the difficulty.[1]

THE MORBID PROCLIVITIES AND RETROGRESSIVE TENDENCIES IN THE OFFSPRING OF MULATTOES.[2]

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OBSERVATIONS extending over a period of more than thirty years have thoroughly impressed the conviction upon my mind that the offspring of mulattoes are the subjects of constitutional diseases to a greater degree than are those of unmixed blood, and that when confined strictly to their own class they scarcely reach the fourth generation in descent, by reason of disease and sterility.

I have often wondered if others have had occasion to notice this feature in mulatto life, or whether the conclusions at which I have arrived are false and unwarranted, from being based upon observations confined to a local district, yet rich in examples that go far to establish the view propounded.

I believe that there is not much to be found in current medical writings upon the subject. Our locality is on the border between the slave and the free States of fifty years ago and more. It was then, and long before had been, the custom of many wealthy planters, as they advanced to old age, to set free that portion of their estates which bore to them a filial relationship, and establish them in homes in a section of country where they would receive fair treatment, consideration and respect as citizens and members of the community in which they should reside. Such an opportunity was offered to them in our locality, largely populated by Abolitionists and sympathizers with the slave.

Thus, a community as it were of mulattoes, whose parents on the father's side were white men, mostly of great wealth and position, socially and politically, and principally of New England stock, existed near us. The most of these people were complete types of physical perfection, tall, muscular, and perfectly developed. Many of them lived to old age—quite to one hundred years. Their wives were mulattoes. They were proud of their parentage and light color of skin. They made good citizens, and often were prosperous as farmers. Their prosperity and pride almost separated them from their less fortunate brethren of darker color, and their children intermarried, that their color and race might continue.

I can trace some of these families through three or four generations. Those of the first cross were robust; those of the second were paler, more ashlike in complexion, of slender form, plainly bearing many of the characteristics of predisposition or inevitable tendencies to special diseases of the strumous type. The third union resulted in less fertility and greater predisposition to disease.

Now, the children present the scrofulous physiognomy. The fourth union, still less fertile than the others, brings forth a progeny largely suffering from cutaneous affections, ophthalmia, rickets, dropsy of the head, white swelling of the knee-joints, morbus coxarius, diseased glands, suppurating sores, uutil the whole generation is quite extinct. I can scarcely find any of the fourth generation in good health.

These people have had all the advantages that their neighbors enjoyed. They had the best of schools, excellent religious privileges; were moral, upright, and highly respected. They were able to maintain an academy of learning, from which their sons and daughters could go forth amply equipped to struggle in the unequal contest of life. All of these institutions succumbed to the waning constitutional vigor of their offspring.

The academy is no more. The schools and churches, so ably maintained by their forefathers, are extinct. The old family name is scarcely heard, and inquiry reveals the fact that their offspring were tuberculous, and either died in youth, or, if living, were so sterile that no descendants scarcely of the old families can be found. This is true not only of one but of many groups of families.

The contrast between the histories of the mulatto and the white and the negro families residing side by side, as to health, as to power to resist disease, and as to longevity, is too great to escape notice or to be regarded as merely incidental.

It is now observable by the colored people themselves that if a mulatto marries back to the parents' stock the children to a greater degree escape scrofulous affections.

I have spoken to a number of physicians in this locality upon this subject, and they all agree with me that tuberculosis exists to an excessive degree among the mulattoes; that they are inferior in vitality, intelligence, and consequently morality; that they exhibit a mortality more considerable than that of the surrounding whites or negroes, and without reunion with the parent stock the mulattoes would soon become extinct.

In the first generation they are quite prolific among themselves, and arrive at maturity rather promisingly, but when these children intermarry they and their descendants are not prolific, a large

[1] In performing a difficult ovariotomy since the reading of the foregoing paper, I found a Meckel's diverticulum extending from the ileum and attached to the right horn of the uterus, close to the Fallopian tube.

[2] Read before the Section of Diseases of Children, American Medical Association, Detroit, Michigan, June 10, 1892.

portion being sterile at even the second and third generations. It is noticeable that the mulatto girls develop in advance of both white and negro girls, but as women they fade away much sooner. It is noticeable also that in the second and third generations of pure mulatto intermixture quite all of the children born are girls, and these are noticeably sterile.

This fact I have observed so much that I believe it to be a physiologic truth. I should be glad to learn if the observations of others who have given any attention to this subject confirm my own.

If this be true in one locality and in the mingling of the white and black races there, why not look for the same result in the cross of races elsewhere, and thus the introduction of the virus of constitutional diseases which is transmitted through the succeeding generations? I believe that ethnologists mainly agree that human hybridity cannot be maintained without reversion or fresh supply from parent blood.

Dr. Robert Knox, in his work on *The Races of Men*, says: "I do not believe that any mulatto race can be maintained beyond the third or fourth generation by mulattoes merely. They must intermarry with the pure races or perish." M. Georges Pouchet says "that such a race, such a type can only have an ephemeral existence." Dr. Paul Topinard refers to a record on this subject in North Carolina. "There the caste of free men was constituted entirely of mulattoes freed by their white fathers. The State, dismayed at the important position which they assumed, put a stop to this liberation. Left to themselves their number diminished at the rate of twenty-nine per cent. decennially."

Ethnologists have sought in vain among the nations of the earth for a race manifestly hybrid, with well-defined characters, intermediate between two known races, perpetuating itself without the concurrence of the parent races.

Dr. Pritchard, in his *Natural History of Man*, in an effort to find such subsisting by themselves, could only point out three instances, the Griquas, the Cafusos and the Papuans.

Broca and others object to the truthfulness of these examples, and assert "that by no means do they prove that a mixed race can perpetuate itself separately."

If Dr. Pritchard, in his vast researches, finds it difficult to discover three examples of hybrid races subsisting by themselves, and they so liable to objection that the other ethnologists deny the proof to be conclusive, then may we not inquire into a cause for the introduction and propagation of diseases, physical weakness, sterility and conditions unfavorable, either for moral or physical development beyond the microbe or the bacillus.

The same causes that degenerated and brought to an ignoble end some of the royal lines and the most ancient blood of Europe are at work still and in our midst also.

Look, and wherever you see the greatest intermingling of races there you see raging tuberculosis, carcinoma and struma in all their terrorizing forms; there you see an excessive mortality among the children, a disparity between the number of men and women, the women being in the majority; there you see the scientist with his microscope hunting for the enemy of life and health in the sputa, the excreta and the cell-elements; when in fact the modification of the racial type, by the influence of some media not apparent in the cell-elements themselves, altered in some way by miscegenation, generates this virus—these microbes, these bacilli, which claim for their victims more than twenty-five per cent. of the dying.

Are there any races comparatively free from tuberculosis and all strumous affections? Wherever you see the purity of race maintained in civilized or barbarous countries there you see little or no tuberculosis and scrofula. Do these affections prevail among the Jews and other unmixed races to anything like the extent observed in countries overrun by immigrants of every race and producing crossed races without limit or regard to race affinities?

Broca mentions the assertion by other ethnologists "that the United States, where the Anglo-Saxon race is still predominant, but which is overrun by immigrants of various other races, is by that very circumstance threatened with decay, inasmuch as this continuous immigration may have the effect of producing a hybrid race containing the germ of disease, decay and future sterility."

There are serious men who have predicted from ethnologic causes the overthrow of the United States, just as Ezekiel predicted the ruin of Alexandria.

The difficulty in finding instances in the past of nations surviving such influences may excite faith in the prediction, in spite of our unexampled growth, that the fundamental facts as to the perpetuation of crossed races will ultimately prevail even in our own country.

In conclusion, I am fully conscious of the fragmentary nature and narrow scope of this paper. I have made no attempt to go into the literature upon this subject, with which indeed I am too imperfectly acquainted.

I have simply endeavored to set forth these crude ideas, which have been the outgrowth of my own observation. If they stimulate the profession to a livelier sense of the importance of looking back beyond the bacillus, and of teaching purity of race in

order to secure greater freedom from tuberculosis, less mortality, less crime, less idiocy and insanity, and greater longevity than are found among any race of hybrids, it will fulfil the object for which it was written.

THE OPERATIVE TREATMENT OF VENTRAL HERNIA RESULTING FROM ABDOMINAL SECTION.[1]

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VENTRAL HERNIA, succeeding abdominal section, differs from the ordinary forms of hernia in that there is no sac with a constricted neck. It forms a broad-based protrusion of the abdominal wall, and is the result of a stretching and separation of the abdominal parietes. The mischief commences in the line of incision, usually the linea alba, which, yielding to the pressure of the abdominal contents and the lateral traction of the abdominal muscles, bulges forward. This forms an entering wedge, and progressive thinning and separation of the fibers go hand-in-hand with increase of bulk. The bulwarks that prevent this occurrence, under natural conditions, are the triangulated arrangement of the superimposed fibers of three sets of muscles, ably reinforced in the middle line by the recti, to which may be added the fascia and the fibrous commissure of the linea alba.

The peritoneum proper, I think, offers little resistance to the intra-abdominal pressure, and yet I believe it plays an important rôle in the prevention and promotion of ventral hernia. In the natural state the parietal peritoneum offers a perfectly smooth, slippery surface to the visceral peritoneum, and this, in connection with the rotund shape of the abdomen, is a valuable safeguard against hernia.

There is no direct and continued impact of the viscera against the walls, for with every varying movement of the body, however slight, they glance and glide away from each other, thus ever shifting and equalizing the pressure. I will not recount the manner in which the different layers of muscle, with their fibers running in different directions, contribute to this end by insensible contractions, and how they reinforce each other in meeting the assaults from within.

Now, anything that roughens the peritoneum acts as a predisposing cause of hernia. Adhesions to the same membrane are of like import, though in the main conservative. The intra-abdominal pressure becomes concentrated and persistent, and the result is a final yielding of the parietes. Another factor is the cicatricial tissue in the line of incision. I am aware of the fact that some of the operations now in vogue for the radical cure of hernia are based upon the formation of a cicatricial plug at the site of hernial protrusion.

It is a very common belief that a tissue is resistant and stable in proportion to its density. This, however, I believe to be an error. Cicatricial tissue will not compare in point of endurance with healthy, natural tissues. It has not the vitality. It is not momentarily renewed and strengthened as they are. It is just in those cases in which suppuration and healing by granulation take place that we reap the harvest of herniæ after our abdominal work. Another factor, and one of the most important, is the retraction and contraction of the abdominal muscles. They continually draw away from the weakest point, enlarging the gap and still further weakening the vulnerable part. The woman with relaxed abdominal walls, of which the muscular tonus is diminished, is, according to my experience, much less susceptible to hernia than she of undiminished muscular vigor.

After the hernia is formed and the parietal resistance removed, the viscera become dislocated, with elongation of their ligamentous attachments and prolapse of the mesentery. The places previously occupied by the organs contract, and there is no more room for them in the cavity proper; they lack the support of their natural attachments. Thus by degrees everything becomes changed, and the difficulties multiply. For these reasons the operative treatment of ventral hernia must often be an unrequited task, and this probably accounts for the general apathy and paucity of literature on the subject.

In the light of the foregoing, the ideal treatment of ventral hernia of this form would be to enter the peritoneal cavity, break up adhesions, lop off redundancies, restore the healthy peritoneum, and so manage the superimposed structures as to bring them as nearly as possible into their natural state and relations, and secure healing by first intention to avoid the weakness of scar-tissue. In a large proportion of cases this is impracticable, and the difficulty is enhanced by the altered state of the abdominal cavity and its contents.

What we most need is an operation that will give a fair measure of success, and which is sufficiently simple and easy of execution to secure its general adoption. It should also be comparatively safe. The invasion of the peritoneal cavity, especially when adhesions exist, must therefore be avoided; for, aside from the extreme difficulty attending the section, when bowel and omentum are glued to the attenuated abdominal wall, rendered more difficult still by the flabbiness incidental to a hernial pouch, the length of time necessary to, and at times the im-

[1] Read in the Section of Obstetrics and Diseases of Women of the American Medical Association, at Detroit, June, 1892.

possibility of, liberating the adhesions, render the procedure extremely unsafe.

The next most desirable method would be to cut down to and deflect the fascia to one side of the median line, dissect up the muscular structures from the median line outward on both sides, interdigitate or overlap these from opposite sides, and suture them in their relative positions. The object of this method is to avoid the weakness and defects attendant on a direct line of union by interposing a series of muscular, fascial, and cutaneous structures between the cavity and the outer world on the median line.

This, while theoretically plausible, is practically impossible; for, it must be remembered, that even in the normal state it is next to impossible to curtail the abdominal cavity to such an extent as to allow the overlapping of muscles and fascia from opposite sides, and now, that the capacity of the cavity has been reduced, the difficulty is even greater. "Yes, but," it will be said, "there is a redundancy in the pouch that will easily admit of this." I think that on careful examination very little muscular structure will be found at this point, and such as may be found will be so attenuated, wide-meshed, and wanting in contractile properties as to be of little avail. The fascia might be of some benefit, but the skin is too extensile and wanting in elasticity to be of lasting service.

The technique that I have adopted, and which seems to me the most practical, the easiest of execution, the safest and the most lasting in its results, will be recognized as an old-time friend in a new garb. It simply consists in the denudation of an elliptical surface, the turning in of redundant tissue, and the union by suture, and, as an operation for cystocele, has been in use many years.

Before describing the operation in detail, however, it will be necessary to give the preliminary treatment. If the case be one of long standing, with prolapsed viscera and a contracted abdominal cavity, the patient will need a preparatory treatment of several weeks' duration. The object of this treatment is to restore, in a measure, the lost abdominal capacity and to strengthen, if possible, the visceral supports. The bowels must be assiduously attended to; the general health looked after; massage used to improve the muscular tonus, and the patient kept recumbent. At stated intervals, say once or twice a day, the patient is placed in the Trendelenburg position, to distend the upper abdomen and to restore the organs to their natural positions. The length of time that this position will be maintained will depend on the easy endurance of the patient. Flatulence, if it exists, should be combated by the proper remedies, of which turpentine is one of the best. For several days preceding the operation measures directed to securing asepsis should be resorted to, not only in the way of general baths, but the cutaneous surface over and around the hernial patch should receive the most painstaking care. In view of the exceeding difficulty attending this part of the work, on account of the lax and wrinkled condition of the skin, I have directed that the patient be placed on her feet during the scrubbing, in order that the skin might be put upon the stretch and the wrinkles effaced. The researches of Kelly have shown how extremely difficult it is to dislodge the germs that ensconce themselves between the layers of epithelium, and hence the extra care. As healing by first intention is the *sine qua non* to a successful issue, it will be seen that the preliminary cleansing process cannot be too rigid. All this having been attended to, and the utmost care being observed in the preparation of the instruments, appliances, and the persons of the operator and assistants, the case is ready.

OPERATION.—With a curved sound depress the pouch over the median line, carrying the instrument in toward the cavity, and with tenacula approximate the sides, being careful not to use traction, as there must be no tension. The line of contact will be found to be elliptical. This may be blazed, or marked out with iodine or ink. Now, with scissors and tenaculum, follow this around, laying bare the fascia and working toward the center, until an inch or more is exposed. This leaves an elliptical island surrounded by an elliptical furrow. It is well to freshen the outer margin of the skin of the island. If the area is not too large I am in the habit of denuding the whole. Bleeding vessels being secured, the blood and débris cleared away, and the parts washed with an antiseptic solution, a small rubber drainage-tube is slipped over the sound and the parts depressed as before. The tube must be long enough to project at either extremity. The use of the tube is sometimes dispensed with, especially if the entire surface has been pared. A continuous catgut suture is now run along the inner aspect of the denuded strip and made to include the skin-margin of the central island. A second and a third row are superimposed until the gap is closed and the parts brought into nice apposition. The probe is now withdrawn, leaving the drainage-tube in place. Aristol is sprinkled over the wound and a heavy layer of gauze over this.

Strips of rubber adhesive plaster, to which tapes have been attached, are now applied to the sides of the abdomen well down, and the tapes tied over the dressings in the median line. Over this is placed a thick layer of absorbent cotton, held in place by a four-tailed flannel bandage. The patient is put to bed and treated just as after abdominal section, the object being to prevent vomiting and the accumulation of intestinal flatus.

ORIGINAL LECTURE.

ENDOCARDITIS—ANEMIA—AORTIC STENOSIS —ENLARGED SPLEEN.

BY JOSEPH M. PATTON, M.D.,
PROFESSOR OF INTERNAL MEDICINE IN THE CHICAGO POLYCLINIC.

ENDOCARDITIS.

GENTLEMEN: This woman is twenty-eight years old and married. She came to this clinic about a year ago, complaining of pain in the cardiac region, some dyspnea, and slight cough. She had a rapid, irregular pulse; the heart's action was excited and forcible. She had no elevation of temperature. There was slight edema about the ankles. The urine was scanty and high-colored; it had a specific gravity of about 1028, and contained no albumin and no casts. At that time she presented a faint mitral regurgitant murmur, and a diagnosis was made of endocarditis affecting the mitral valve. She was placed on sodium bromide and small doses of tincture of opium; she was also given some potassium acetate. Under this treatment the pain in the cardiac region disappeared, the pulse became more regular, and the edema about the ankles disappeared. She was then placed on tonic treatment and has continued to improve until the present time. She gave us a rheumatic history, having had rheumatism at various times in early life; during the present winter she has had rheumatism of various sets of muscles, for which she has had sodium salicylate. To-day you will notice that her pulse is regular and a little forcible; the impulse of the heart is a little to the left and very slightly displaced downward. She does not complain of pain at the present time or of cough, and says that her heart gives her no trouble. The forcible action of the heart at present is probably due to excitement in coming before the class. Over the mitral area you will notice a very slight prolongation of the first sound, which is carried indistinctly toward the left. The endocarditis from which she was suffering when she first appeared in this clinic has subsided, leaving of course some trouble with the mitral valve, which is the cause of the murmur we hear to-day. The right side of the heart has compensated fully for this condition, so that she does not suffer at all from trouble with her heart. We will again place her on sodium salicylate and small doses of potassium iodide. The latter is given both as an alterative and as a direct cardiac tonic. According to recent investigations potassium iodide has a twofold therapeutic action: it causes temporary contraction of the small vessels, followed by dilatation, involving the coronary circulation as well as the general circulation. We may thus expect to improve the nutrition of the heart-muscle by increasing the amount of blood furnished to the organ itself.

ANEMIA WITH ENDOCARDIAL MURMURS.

This young woman is nineteen years old and is a sister of the one of whom we have just been speaking. She came to the clinic about three months ago complaining of amenorrhea. She was given some uterine tonic at that time, which stimulated her menstrual function, and she menstruated regularly the following month. She comes back to-day saying that she has not menstruated during the last two months. You will notice that her skin is pale and sallow; the mucous membranes are somewhat blanched; the cornea is unusually clear and white. The skin does not have the greenish-yellow hue of chlorosis; nor are the mucous membranes as white as they appear in that disease. The patient says that her appetite is not good; her bowels are regular; she does not suffer from headache, but occasionally has slight spells of dizziness. Her pulse is rapid, rather small and compressible. On looking at her chest the action of the heart is seen to be rapid and somewhat forcible, probably as a result of excitement. The apex-beat is in the normal situation. On listening to her heart you will observe a soft, blowing systolic murmur, heard over an area bounded by the upper border of the third rib above, the lower border of the fourth interspace below, the left edge of the sternum on the right, and a parallel line on the left about two inches from the edge of the sternum. This murmur is heard best at the base of the heart, but can be readily distinguished all over the area described. You will also hear along the course of the subclavian vessels a loud blowing systolic murmur, much harsher than the one heard over the heart. This murmur is heard only on deep inspiration, and is heard as long as the lung is held fully expanded, disappearing with the beginning of expiration. You can also hear the venous hum, the so-called *bruit de diable* of the French, over the jugular vein, although it is not very well marked in this case.

Now, these murmurs are hemic in character, and due to the watery condition of the blood. This is a case of simple anemia. Anemia is often found in young girls at about the age of puberty. Among the Bohemians and Poles especially we often find well-marked cases of chlorosis at this period, and they are nearly always associated with amenorrhea. Among the Americans we find more cases of simple anemia, and they may be associated with amenorrhea or menorrhagia. We find then, in this case, sufficient reason for the amenorrhea. These various hemic murmurs, both endocardial and vascular, which occur in these conditions, are valuable as confirmatory evidence of an anemic condition. We will often hear a vascular murmur when no cardiac murmur can be detected, and the vascular murmurs, that is, those produced in the subclavian vessels, afford a more reliable diagnostic indication of the watery condition of the blood than does the venous hum in the jugular. These murmurs in the subclavian vessels have been supposed to be due to pleuritic adhesions, making traction on the costal pleura. I do not think that this is the real cause. They are probably due to pressure on the subclavian vessels by the expanded lung, which changes the anatomic relations of the part, making some portion of the artery narrower in caliber, because, when present in cases in which the expansion of the two apices is not equal, they will be found best marked on that side that shows best expansion, and not on that side on which we might have reason to suppose that there could be pleuritic adhesions. The cardiac murmur in this case is one of the most distinct endocardial murmurs that you may expect to hear.

The diagnosis from organic murmurs is important, because when a hemic murmur exists in young persons that have presented evidences of rheumatism, such as those transient pains commonly called "growing pains,"

and often associated in early life with a rapid, forcible, and irritable heart, they may readily be mistaken as rheumatic.

Intra-cardiac hemic murmurs are always systolic and softer than cardiac murmurs of organic origin, with the exception of occasional cases of mitral regurgitant murmurs. They are heard loudest at the base of the heart, over only the cardiac area, and are not transmitted as organic murmurs may be transmitted. The hemic murmur, for instance, is heard plainly to the left of the sternum; it is not transmitted, although it may be distinguished as far dowa as the point of apex-contact, but not plainly. It is not heard at all outside of the mitral area or to the right of the sternum.

Now, the treatment of this case must necessarily be directed to the improvement of the condition of the blood, the specific gravity of which is lessened and the hemoglobin diminished; the corpuscles are smaller, and the same number of corpuscles will occupy a much smaller space than they would in healthy blood. When this condition results from want of corpuscular development, it is termed anematosis. When due to degeneration of the corpuscles, it is called hemophthisis. The blood-mass may be diminished; to this the term oligemia is applied. The best medicines to improve the condition of the blood are the various iron tonics, and the most efficient is the fresh carbonate of iron. This is made by using equal proportions of iron sulphate and pure potassium carbonate with a little sugar and enough acacia to make a mass. It is preferable to the sugar-coated pill. A fifth of a grain of nux vomica may be added to this pill to improve the innervation of the vaso-motor system, which is always at fault, as the vascular tension is always low in cases of this kind. As much of this medicine should be administered as the patient can take. Four or five grains should be given after every meal; the dose may be increased if the stomach bears it well. For the gastric trouble that is often associated with this condition you may give a few grains of sodium bromide with a little pepsin, with some powdered charcoal if there is fermentation and eructations of gas. Constipation will be nicely relieved by the employment of cascara sagrada two or three times a day.

We will place this young woman on this line of treatment, and as soon as her nutrition is improved we can confidently predict that her menstruation will become regular. In order to stimulate the menstrual function, it is well to administer some such remedy as she was given before, at about the time that she would expect to menstruate—any reliable preparation of viburnum.

SLIGHT AORTIC STENOSIS OF LONG STANDING, FOLLOWED BY OVERSTRAIN OF THE HEART AND DILATATION.

This young woman is twenty-three years old and married. She states that she had rheumatism when she was ten years old, but not since that time. She comes to the clinic on account of a cough that she has had for two months. She also says that she has recently had slight pains in the region of her heart, with some palpitation, and occasionally slight dizziness. On examination of her lungs we find nothing to account for her cough. Her heart is beating rapidly. The action is forcible; the area of cardiac impulse is increased. On percussion, the area of dulness extends to the nipple line; it is also displaced downward about half an inch. On auscultation in the mitral area we hear a faint, soft systolic murmur transmitted only a short distance to the left. Over the aortic valves there is a slight prolongation of the first sound, indicating that the aortic valves are somewhat stenotic. Now, this stenosis at the aortic valve is probably of long standing and due to the rheumatism that she had in early life. This condition would account for the moderate hypertrophy of the left ventricle and for the slight displacement of the heart downward. At the present time, however, we find the left ventricle dilated. The dilatation is relatively greater than the slight hypertrophy that has taken place; we must seek a cause for this dilatation. It is evident that the dilatation is not the result of degeneration of the heart-muscle, because the muscle, as you will observe by the character of the heart's action and the quality of the first sound, is in good condition.

The patient tells us that she is a dancer by profession and has followed this occupation for a number of years, for several hours every day, and that lately some of the figure-dancing has been especially hard, and that she has noticed that it was more difficult for her to do than formerly. This would explain the cause of the dilatation. Given a heart slightly hypertrophied on account of moderate aortic stenosis, we have a condition in which compensation has been effected, and which would probably have given her no trouble if she had not been subjected to overstrain; but the violent action of the heart necessary in the active exercise of dancing raised the intra-ventricular pressure to such an extent that the cavities of the heart were dilated, the mitral ring was slightly stretched, and she has a slight relative mitral regurgitation, which explains the production of the mitral murmur now present. It also explains why we should have a dilated ventricle with so good a heart-muscle. The condition would come under the head of idiopathic enlargement of the heart as described by Fraentzel. Fraentzel, Leyden, and Schott have described cases of cardiac dilatation resulting from acute overstrain of the heart.

Now, in treating this case, the first thing to do is to relieve the heart of any such strain. The woman must stop her dancing. If she does this the condition will diminish of itself, the dilatation will subside, and the heart may be able to perform all the labor required of it. To quiet the action of the heart and the nervous arhythmia present in this case we will give her ten grains of sodium bromide, with half a drop of tincture of aconite, three or four times a day. She will also be given some general tonics; her diet will be regulated; and if she will give up her dancing we can safely assure her improvement.

This young woman is also a dancer. For the past three or four months she has been troubled with palpitation of the heart, some dyspnea, and some dizziness. On examination we find the action of the heart more forcible than in the other patient. The limit of dulness is not so much displaced to the left, and it is also very slightly displaced downward. There are no abnormal valvular sounds to be heard in this case, and the signs are simply those of moderate hypertrophy on the left side. This hypertrophy in so young a girl, in the ab-

sence of any valvular lesions or any abnormal condition of the vascular tension, in the absence of any evidence of disease of the kidneys or any of the organs, can only be explained by the nature of her work. The enlargement of the heart, due to the strain of dancing, in this case is one simply of hypertrophy. In the other there was an already constricting valve at the aortic orifice which modified the conditions, and therefore we would have dilatation under the same conditions as we get simple hypertrophy in this instance.

These cases are interesting as showing the abnormal conditions of the heart that may devolop simply as a result of overstrain.

This girl should also be made to change her occupation. She should be placed on the same treatment as the other case, and although one is a case of hypertrophy, and the other one of combined hypertrophy and dilatation, the treatment would be the same in both instances, because the heart-muscle is good and we have virtually the same conditions to counteract.

ENLARGED SPLEEN.

This man is forty years old and a farm-laborer by occupation. He appeared at the clinic about three months ago in substantially the same condition as you see him now, presenting no history of interest, except that of enlargement of the abdomen. He had never been sick in his life, has never had any form of malarial fever, and knows of no reason why his abdomen should have enlarged in this way.

On looking at him you will observe an enlargement on the left side of the abdomen, occupying the left hypochondrium, extending down into the left inguinal region and over to the right of the umbilicus. On palpation you find this region filled with a tumor that is hard, smooth, doughy; it extends from about the ninth rib down to within two inches of the pubes and more than an inch to the right of the navel. As you place him on his back and draw up the knees, you find that you can palpate a large tumor. It is sharply rounded and shelving; the point of the tumor is directed downward and toward the right inguinal region. To the right of and just above the umbilicus you will find a V-shaped notch in the abdomen, which tells you at once that you have a spleen to deal with, this being the hilus of the organ and being characteristic of the splenic outline.

Now, you will remember that the spleen is enlarged in various conditions. It may be enlarged in acute exanthematous diseases; it may be enlarged in malarial fevers; you may have a chronic hypertrophy of the spleen as a result of malarial disease; you may have it enlarged from cysts, hydatids, carcinoma, tuberculosis, and other conditions. This evidently belongs to the chronic enlargements of the spleen, such as we find resulting from chronic malarial poisoning or from leukocythemia. The differential diagnosis of these conditions can only be made by examination of the blood. We place a specimen of this man's blood under the microscope and you will readily recognize, without any special effort at accurate measurement of the number of corpuscles, that the white corpuscles are relatively greatly increased in number. You notice that they are large and granular and that their outline is not very distinct. This tells us that we have a case of leukocythemia.

You will remember that there are three principal varieties of leukocythemia—the splenic form, of which this is an instance, and in which the enlargement of the spleen is the main symptom; then we have the lymphatic form, in which the lymphatic glands in the various parts of the body are enlarged, with or without marked enlargement of the spleen; lastly, we have the so-called myelogenic form, in which the marrow of the long bones is involved, being transformed into a purulloid condition and increased in quantity.

Leukocythemia may present a variety of symptoms. There may be fever, irregular chills, disturbance of digestion, diarrhea alternating with constipation, petechial eruptions all over the body, hemorrhages into the serous cavities, such as the tunica vaginalis testis, the peritoneum, the pericardium, pleura, or the arachnoid cavities of the brain. There is also a liability to cerebral hemorrhage, from degeneration of the coats of the vessels. These various symptoms are more likely to be present in the lymphatic and myelogenic forms of leukocythemia than in the splenic form.

The duration of the disease is estimated at from three months to three years. The splenic variety, when presenting no fever or no digestive disturbance, may last much longer. Patients may die suddenly from cerebral hemorrhage.

The treatment is not satisfactory. We have as yet no recoveries of this condition recorded. Transfusions of blood have been partially successful. Extirpation of the spleen has totally failed. Intra-parenchymatous injections of ergot, carbolic acid, sclerotinic acid, and other substances have been largely practised by Mosler and others, with the effect of causing partial contraction of the spleen, but no cures have been effected.

In this case we have been following the established treatment of iron, arsenic, and quinine. The man has been taking ten drops of iron citro-muriate, five drops of solution of potassium arseniate, and five grains of quinine sulphate, three times a day. His spleen is smaller now than when he first presented himself at the clinic. He tells us that he can now eat a comfortable meal without any disturbance of his stomach, which he could not do previously on account of the pressure on his stomach from the enlarged spleen; then, too, the tension of the abdominal walls is not as great and the tumor can be more readily palpated than at that time. Without promising much in this instance, we feel warranted in continuing this line of treatment, as the man is more comfortable and the spleen somewhat smaller in size; but the prognosis is still serious. These cases sometimes improve temporarily, and die suddenly from cerebral hemorrhage or some unknown cause.

CLINICAL MEMORANDA.

GENERAL RESPIRATORY TUBERCULOSIS:

Pulmonary, Laryngeal, Nasal.

BY CHARLES P. GRAYSON, M.D.,

ASSISTANT PHYSICIAN, DEPARTMENT OF DISEASES OF THE THROAT AND NOSE, HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

THE interest in the case herewith reported lies not only in the uncommonly wide distribution of the disease, but in certain methods of treatment adopted, and their

results. The lungs were the parts primarily and most extensively involved, but it was for the consecutive laryngeal and nasal lesions that the patient came under the partial supervision of the Throat Department, and it is of these latter that I shall speak with the greater detail.

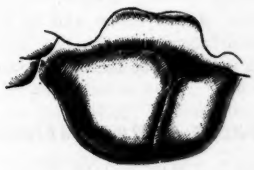
To dispose as briefly as possible of the family and previous personal history, I quote from the notes of the resident, Dr. Furness, who kindly permits me to do so:

"George McV., aged thirty-two years; machinist; English. Both parents, a brother and a sister, all died of phthisis. Until within a year prior to his admission to hospital, a fairly healthy man. At that time a cough, which had troubled him more or less for some months, became suddenly aggravated. Flesh and strength were rapidly lost and the voice became weak and hoarse. Six months ago, external swelling of the throat appeared; the voice was entirely lost, and swallowing became both difficult and painful." Physical examination disclosed extensive disease of both lungs, further advanced in the right than in the left, the right upper lobe containing cavities and the lower lobes showing numerous areas of softening.

The patient's first visit to the Throat Department was made December 19th. He was brought down from the ward in a wheel-chair and presented a most pitiful spectacle. Emaciation was extreme. Cough was frequent and painful, quite aphonic, and only slightly productive. Voice was extinct. Aside from his general appearance, the most prominent objective symptom was dyspnea. Loud inspiratory stridor was present, all the accessory respiratory muscles being in play, and the nasal alæ widely dilated. Externally, the prominence of the larynx was increased to almost double its normal size, and seemed even larger from the advanced wasting of the neighboring cervical tissues. There were, in addition, some redness and edema of the overlying skin, with considerable tenderness on pressure.

Laryngoscopic examination. The appearance of the epiglottis departed but slightly from the normal. There was moderate swelling, due apparently to simple edema, and a number of dilated veins coursed over the anterior surface. Below this, however, the larynx presented a picture of advanced tuberculous disease, from which death by asphyxia seemed imminent. The accompanying sketch may, perhaps, convey a clearer idea of its menacing condition than could a verbal description.

FIG. 1.



It will be seen how very small an aperture remained for purposes of respiration. The whole infiltrated mass was immovable, forced inspiration, or attempted phonation producing no perceptible alteration in the mirrored image. As to coloring, the typical grayish pallor of tuberculous disease predominated, but it was splashed here and there by patches of catarrhal hyperemia. All of the mucous membrane in sight was still intact, but the absent voice, the agony attending deglutition, and the degree of general swelling, spoke but too plainly of active destruction going on below the parts shown in the glass. The previously mentioned redness and edema of the skin, with the marked tenderness on pressure, were suggestive of implication of the cartilages.

Above the larynx the pharyngeal and oral mucous membranes were characteristically anemic.

The nose. On both sides anterior rhinoscopy disclosed the same anemic condition of the lining mucosa as was present in the lower portions of the respiratory tract. In addition, however, on the left side, just within the margin of the vestibule, an ulcer was discovered on the septum. This lesion corresponded closely in appearance with the classical descriptions of the tuberculous ulcer in this region. There was no encircling inflammatory areola; the edges were flush with the contiguous tissue and passed into a slightly depressed, caseating center. The ulcer seemed entirely non-secreting, only a few particles of necrotic tissue being found upon its surface. In shape it was irregularly oval, its longer diameter measuring 11 mm.

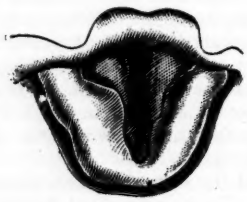
The management of the case, so far as it related to the pulmonary disease and the patient's general condition, was in other hands, and will not be considered here. That portion of the treatment, however, directed specially to the lesions involving the throat and nose, claims notice because of its having included the use of mercuric chloride in watery solution as an agent with which to check the accompanying destructive ulceration in these regions.

At the time when local treatment was first instituted, the larynx presented in an eminent degree the condition termed by Gottstein "pseudo-edema"—the enormous swelling being due, not to a simple inflammatory exudation into the meshes of the submucosa, but to the specific tuberculous infiltration of the tissues generally. The scattered superficial catarrh, no doubt, played a minor part in adding to the swelling, and constricting still further the already dangerously diminished space for the entrance of air, and it was to the subjugation of this that the earlier treatment was directed. This consisted of but little more than routine measures, viz., the external application of ice-water compresses, inhalations every few hours of steam medicated with compound tincture of benzoin, thorough cleansing of the larynx once daily by the use of a mild alkaline spray, followed by spraying with a 4 per cent. solution of cocaine, and this again by generous insufflations of a powder composed of iodoform, bismuth, tannic acid, and acacia. It is scarcely necessary to add that the diet during this time was entirely liquid and bland.

By the close of the first week there was much cause for satisfaction. The simple catarrh had subsided, and with it enough of the swelling to greatly relieve the dyspnea and to markedly facilitate expectoration. Nutrition was improved, considerable strength regained, and the patient abandoned his wheel-chair and came for his daily treatment unassisted. At this point, an intervening Sunday causing the lapse of forty-eight instead of twenty-four hours without treatment, seemed to give the invading bacilli the opportunity of resuming active hostilities. The morning of December 28th found the laryngeal

condition almost, if not quite, as grave as at the first examination. The previous treatment was renewed and continued without change, but the examination of the next day showed that the progress of the disease was not again to be arrested without the aid of some powerful ally. Small superficial erosions on the left ary-epiglottic fold heralded the commencement of general disintegration of the infiltrated tissues. Additional erosions soon appeared on the right fold also, and on both sides these rapidly coalesced, deepened, and passed into active ulceration. In the face of this exhibition of weakness upon the part of iodoform, it was determined to substitute for it a solution of mercuric chloride. The strength first employed was 1 : 500. As a sort of control-experiment this was applied for the first two days to one side only, the right, while the iodoform was continued upon the left. This period, brief as it was, proved quite long enough to exhibit a marked difference in the behavior of the two ulcerating folds under the two methods of treatment. The right had undergone easily-perceptible improvement by the end of the second day, while the ulceration on the left side seemed to have been quite unaffected in its progress by the daily coating of iodoform. Subsequently, therefore, the bichloride solution was applied to both sides. The cotton-wool tufts used for this purpose were made to carry a just sufficient quantity of the medicament and no more. Thus the action of the solution was carefully limited to the cocainized ulcerations, and no excess was allowed to jeopardize the integrity of still intact membrane or to expose the patient to the risk of the toxic effects of the drug. For almost two weeks the condition of the larynx underwent steady improvement. Destruction was checked, vigorous granulations made their appearance, and as these underwent transformation into cicatricial tissue, considerable contraction of the swollen folds occurred, with coincident widening of the respiratory aperture and proportionately diminished dyspnea. At this time the disease-process seeming so well under control, another Sunday was allowed to pass without treatment. Before the day was over, however, the patient, through some carelessness of his own, became chilled, the weakened throat felt the effects of the shock most keenly, and the ensuing morning found us confronted by a second relapse. Appearances were again so menacing that, rather than risk having all that had been accomplished quickly undone, the strength of the bichloride solution was doubled, making it 1 : 250. Once more it proved wholly efficient, the threatened recommencement of disintegration was averted, and from this time until the patient's death the larynx was kept entirely neutral so far as its exerting any influence in hastening that result was concerned. On February 4th, three days previously to death, this second sketch was made. Comparison with Fig. 1 will demonstrate with sufficient clearness, it is hoped, what the treatment had accomplished.

FIG. 2.



Autopsy. The larynx being removed, examination revealed the following condition: In spite of post-mortem shrinkage, it was, as a whole, much larger than normal. But little remained of the vocal bands—these, together with the lower thirds of the ventricular bands, having been almost completely destroyed. The upper portions of the ventricular bands were merged above into the thickened ary-epiglottic folds, and these latter bore upon their upper surfaces smooth, well-organized cicatrices, free from vegetative proliferations, and showing but slight traces of the recent active ulceration. Death was due to asthenia, the advanced destruction of the lungs found fully confirming the results of physical examination.

A few words in conclusion as to the nasal lesion. The reported cases of genuine tuberculous ulceration of the nasal cavities are comparatively few (under thirty) in number. I much regret that, no microscopic examination of the contents of this ulcer having been made, the diagnosis may be fairly questioned. If, however, in connection with the characteristic local appearances present, the case be considered in its entirety, together with the fact that all of the other probable or possible causes of such ulceration could be definitely excluded, I think that but little doubt can reasonably be entertained as to its tuberculous nature.

Regarding its treatment: Its location made it so easy of access that the galvano-cautery promptly suggested itself as the speediest means for its eradication. This is a measure that has been successfully adopted and warmly advocated by several Continental authorities. During the first week, however, the patient's general condition forbade an immediate resort to this measure, and the same local applications were made here as to the larynx. The result was largely negative. The ulcer became cleaner and, in so far, improved in appearance, but at the end of ten days it had not undergone the least contraction, and no disposition to the formation of healthy granulations was manifest. Simultaneously with the first use of mercuric chloride to the larynx, it was applied here. The ulcer being first thoroughly curetted, the 1 : 500 solution was pressed firmly into the resulting excavation. Healing was much more prompt than in the more inferiorly situated disease, the comparatively sheltered position of this lesion and its freedom from the constant disturbance to which the larynx was subjected, enabling it to outstrip the latter in their common course toward cure.

A CALCULUS IN WHARTON'S DUCT.

BY J. THORINGTON, M.D.,
OF PHILADELPHIA.

G. S. A., a shoemaker, thirty-two years old, a German by birth, presented himself at the Throat Clinic of Jefferson Medical College Hospital, complaining of "sore-mouth" that had existed for two years.

Two years previously, while at work, he was, without apparent cause, seized with acute pain in the floor of the

mouth, to the right side of the tongue; this pain gradually extended to the right side of the face and neck, becoming so severe after three days that he could not sleep, and the parts became so swollen that it was impossible to swallow solid food. In this condition he sought medical aid, and after two days' use of gargles and washes, a thick, clear fluid began to flow from the mouth, and convalescence was rapid, except that, ever since this attack, he has had a daily paroxysm of pain at the original focus, coming on as a rule at about dinner-time.

Examination revealed a prominence on the floor of the mouth, between the tongue and the teeth of the right side; this prominence was not sufficient, however, to raise the tongue, and was only noticed when the patient elevated or retracted this organ.

At about a quarter of an inch to the right of the middle of the frenum linguæ, a small whitish opening could be seen, slightly elevated above the mucous membrane, the patient explaining and demonstrating that through this opening, by digital pressure upward, inward, and forward to the inside of the ramus of the jaw, a fine stream of clear fluid could be ejected through the open mouth, to the left, a distance of a foot or more. It was in this way that the patient had been getting relief from his daily attack of pain during the preceding two years.

On palpation with the right index finger in the mouth, and the fingers of the left hand under the jaw, a hard, elongated tumor, painful on pressure, could be felt, extending from within a quarter of an inch of the frenum on the right side, back between the teeth and the tongue, a distance of an inch. This tumor was larger anteriorly and diminished in size posteriorly.

Probing the opening previously mentioned, a hard grating substance could be distinctly felt.

After applying a 4 per cent. solution of cocaine, an incision half an inch in length was made over the tumor, extending backward from the point of opening. A calculus immediately presented, and with the aid of forceps was extracted. A probe was then introduced into the wound without any difficulty, passed backward, slightly downward and outward a distance of two and a half inches; no other calculi being detected in the duct or gland, the cavity was cleansed with a ten-volume solution of hydrogen dioxide, then dried with absorbent cotton, and finally swabbed out with the following solution:

℞.—Potassii iodid.	gr. xxx.
Tinct. iodi	ʒj.
Glycerin.	ʒij.
Aq. dest. . . . . q. s.	ʒjss.

This solution was applied daily for three days, and the wound was permitted to heal.

A week later the patient reported that he was well, and inspection showed the wound to have closed. The surface of the calculus was rough. The mass weighed twenty-one grains. It measured an inch in length, an inch in circumference at the larger, and three-eighths of an inch at the smaller extremity. The general shape of the calculus was not unlike that of a large date-seed.

Careful analysis showed the calculus to be composed of carbonate and phosphate of lime.

In presenting this case I wish especially to note:

1st. The history of sudden onset, which suggests the strong probability of the nucleus of this calculus having its origin in the submaxillary gland, and being washed forward by the salivary secretion, and as not having its origin in the duct; and

2d. The importance at all times of a careful examination. This patient before coming to the clinic had visited three physicians; two told him it was "nothing," and the third said he had a ranula; none, however, had made a digital examination or probed the opening.

1630 ARCH STREET.

MEDICAL PROGRESS.

Proctectomy for Carcinoma of the Rectum. — BROWN (*Lancet*, 1892, 3588, p. 1235) reports the case of a robust, healthy-looking man, fifty-two years old, who presented symptoms of carcinoma of the rectum, and was losing much blood with every movement of the bowel. The growth was within reach of examination, but too high to allow of an ordinary proctectomy. The bowel was freely movable within the pelvis, and the finger could be passed beyond the disease. Left lumbar colotomy was performed, and five weeks later, the artificial anus being well established and acting freely, the lower segment of the intestine (between the opening in the colon and the anus) was twice daily for two days thoroughly washed with large quantities of a solution of carbolic acid, 1:80, until the escaping fluid was free from fecal taint. A silver catheter was passed into the bladder and held in position throughout the whole of the subsequent operation. The patient was then turned well over on the right side, and the thighs were flexed on the abdomen. A square flap, four inches in length and four in width, including all of the soft tissues, was raised from the posterior surface of the sacrum and turned upward, the free edge being two inches above the anus and the attached margin being opposite the third segment of the sacrum. The sacrum was then sawn transversely at the level of its fourth segment, the lateral attachments below, as far as the tip of the coccyx, severed, and this bone "flap" turned downward. The hemorrhage was free, but was controlled by "clip" forceps and sponge-pressure, a few of the larger vessels being tied. A finger was next introduced through the anus, well up into the rectum, and the gut gradually freed from its attachments by means of scissors. On attempting to draw the bowel out of the wound it was found that the disease extended higher than the cut edge of the sacrum, so that an additional three-fourths of an inch of bone was removed. The rectum was then divided above the internal sphincter, drawn out of the wound, and its posterior wall slit up beyond the limits of the growth. The bowel was now seized with large pedicle-forceps above the level of the growth and cut away with scissors, the line of removal being half an inch above the upper limit of the disease. The free extremity of the rectum was stitched in the upper right angle of the wound, and plugged with a large sponge. The wound was freely irrigated and filled with iodoform-gauze. The sacrum was then replaced, and the skin-flap turned down and secured by sutures. Free drainage was provided for. The wound was dressed with dry wool, and firm pressure was applied by means of a flannel roller. There was little shock. Apparently the peritoneal cavity had not been opened. A few days

after the operation the opening in the colon ceased to act, in consequence of the disappearance of the "spur" from traction on the bowel. As a result, fecal matter passed into the rectum, the wound became foul, and symptoms of septic intoxication appeared. The wound in the bowel was reopened, and the colon drawn out and divided. A catheter had to be employed as long as the patient was kept on his side. He passed urine without assistance as soon as he got out of bed. His general health was well maintained, and he suffered but little pain.

Nervous Hepatic Colic.—At the recent Congress for Internal Medicine held at Leipzig, FÜRBRINGER (*Suppl. Centralbl. f. klin. Medicin*, No. 25, 1892, p. 46) defines the characteristics of nervous hepatic colic. The attack closely simulates that of calculous colic, but the pain is most intense in the region of the liver. Nervous hepatic colic is a symptom of irritable weakness of the nervous system, and occurs especially in young, neurasthenic, and hysterical patients, often in association with other visceral neuralgias, such as pleurodynia, heart-pain, nephralgia, oöphoralgia. At times the knee-jerk is greatly exaggerated. The exciting factor in an attack is usually not apparent, and is rarely constituted by errors in diet, over-activity, anger, menstruation. The attacks frequently present a certain periodicity of recurrence. Icterus and swelling of the liver are wanting. Tenderness over the liver is always present. Although the affection may last for many years, it never leads to inflammatory conditions. The best therapeutic results are to be obtained by anti-neurasthenic treatment. Nervous hepatic colic may be associated with peritoneal adhesions of the liver to adjacent organs (usually in association with cholelithiasis).

Foreign Body in the Air-Passages for Five Months.—WILSON (*Glasgow Medical Journal*, July, 1892, p. 24,) has reported the case of a man, twenty-eight years old, in which a whistle, made of a circular piece of tin, perforated at the center and folded on itself, measuring at its base one and a half inches, and transversely three-quarters of an inch, was inspired into the trachea. Respiration was somewhat obstructed, and a peculiar metallic wheeze was heard on sudden expiration. Examination, however, failed to detect the situation of the foreign body. For five months the man suffered comparatively little inconvenience. There was dyspnea on exertion, and occasionally a sense of discomfort at the level of the upper portion of the sternum. On cough, the body could be felt to move. Sleep was disturbed by a sense of fear. One morning the man awoke with a tickling sensation in the throat, and on coughing the whistle was ejected.

THERAPEUTIC NOTES.

Trional and Tetronal.—As the result of a considerable experience at the psychiatric clinic at Jena, SCHAEFER (*Berliner klin. Wochenschr.*, No. 29, 1892, p. 724), concludes that trional and tetronal possess a hypnotic and sedative influence, tetronal being the more active sedative. The therapeutic effects appear in ten or twenty minutes after administration. Trional is indicated as a safe and promptly-acting hypnotic in cases of insomnia, of the various forms of neurasthenia, of functional psychoses and of organic disease of the brain. It fails in cases of morphinism or cocainism, or in which physical pain is a prominent symptom. Tetronal is indicated in cases of psychoses in which motor unrest of moderate degree prevents sleep. Neither is indicated as a sedative in cases of marked motor and mental excitement. From fifteen to thirty grains constitute an active dose; single doses of forty-five and sixty grains and daily doses of from ninety grains to two drams may safely be given. The drug is best given at bedtime, dissolved in milk or in wine. Other than slight irritation of the stomach and intestines, no bad effects were observed. Secondary manifestations were observed in a small number of cases. No unpleasant symptoms attended the withdrawal of the remedy after it had been given for some time; neither was a tolerance to the drug established.

Resuscitation after Drowning.—At a meeting of the French Academy of Medicine, LABORDE (*Münchener medicin. Wochenschrift*, 1892, No. 28, p. 501) reported the resuscitation from drowning of two cases by separating the jaws and alternately strongly drawing the tongue forward and pushing it backward. The strong traction on the root of the tongue exerts a reflex influence upon the respiratory apparatus, and may be made to conform with the respiratory rhythm.

For Scabies.—

℞.—Sulphuris sublimat. } . . . āā ℥ij.
Olei cadini }
Cretæ preparat. . . . . ℥ijss.
Saponis viridis } . . . āā ℥j.
Adipis }
M. et ft. ung.
S.—Apply topically. HEBRA.

Strontium Bromide for Vomiting.—CORONEDI (*Practitioner*, July, 1892, p. 24) recommends the employment of strontium bromide for the relief of vomiting of nervous, or of gastric origin, or dependent upon pregnancy, and reports a number of illustrative cases. He prefers to give the drug in solid form, because of its deliquescence, in doses of fifteen grains, kept in tightly-corked vials, twice or four times a day.

For Parenchymatous Keratitis and Corneal Opacities.—

℞.—Unguent. hydrargyri . . . ℥j.
Lanolini . . . . . ℥j.
Vaselini . . . . . ℥ij.—M.
Ft. unguent.
S.—Apply topically.

—*Centralbl. f. Augenheilk.; Wiener med. Presse*, 1892, No. 16.

Creasote for Scrophulosis.—Based upon the result of his experience, SOMMERBRODT (*Berliner. klin. Wochenschr.*, No. 26, 1892, p. 641) renews his original recommendation of the employment of creasote in the treatment of scrophulosis. In children, the initial dose may be a drop or two, gradually increased, and always given after meals.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, AUGUST 13, 1892.

INVOLUNTARY NEWSPAPER DOCTORS.

NOT every man whose name and doings get into the newspapers is a sneak advertiser. A reporter may slip into the clinical amphitheater or be brought thither by an unwise student-friend. He will describe what he sees and mention the name of the teacher whose work he has witnessed. But the report will indicate its source by its inaccuracies and its curious and *naïve* phraseology, just as the dictated report betrays its source by accurate technical terminology. Then, again, the personal character of some men is sufficient evidence that accidental newspaper notice is not of their seeking.

A distinguished teacher of this city, a member of the faculty of a prominent college, lately sent us a clipping for our scrap-book, containing a report of an operation done by him at the college clinic. The accompanying letter assured us that the notice was extremely distasteful to him. This assurance was entirely unnecessary. In the first place, we knew the man, as the community and the profession know and honor him. It is a simple impossibility to connect his name with the shadow of a shade of unworthy suspicion. In the second place, the terminology of the report was unmistakably and ludicrously that of the reporter; it was graphic in its very blunders. In the third place, the few lines in which the story of a rare and really great exhibition of surgical skill and daring was told, the absence of other allusion to the operator than his mere name, and the prominence given to the names of assistants, formed a striking contrast to the columns of detail concerning patient, operation, and operator which the true and tried newspaper doctor would have had inserted.

We have lately learned of an even more annoying experience that happened to a member of the same faculty. This gentleman was invited by a classmate to a consultation in a neighboring city. To his extreme disgust he soon after received a number of newspaper clippings stating that "Professor ——— had been in the city in consultation with Drs. ——— and ———, whose advertisements would be found in the adjoining columns."

The question at once arises, How is one to guard against such occurrences? It is impossible. But the whole tenor of one's life and conduct must be such that his character is an immediate proof that he has had no part in the newspaper publication. We have quoted instances in which well-earned character does furnish such proof. How many could we not quote, in which character, equally well-earned, proves just the opposite?

THE "PACIFIC MEDICAL JOURNAL" AND THE QUACKS.

THE *Pacific Medical Journal* is to be congratulated on "the enemies it has made." It has bravely spoken the truth concerning the official action of the State Board of Medical Examiners of California; and concerning the shameless quackery of certain medical men of San Francisco, some of whom, it seems, are members of the County Medical Society and State Medical Society, and some of whom occupy prominent official positions in the public service.

We thought that certain "eminent practitioners," residing less than a thousand miles from the marble tower that is to be topped by a statue of WILLIAM PENN, understood to perfection the art of "working the newspaper racket," but we confess that the methods of their brethren of the Pacific Coast are, if less sly, apparently better calculated to attract the nimble dollar. The *Evening Telegraph*, of this city, has frequently asked why physicians should not be allowed to openly advertise, and perhaps the experience of that journal warrants the question. It would certainly be more decent and more business-

like on the part of medical men to use the advertising columns of newspapers for frank cards at regular rates, than to sponge upon the reading-columns for the transparent kind of news one sometimes finds there; yet we are sure that even that member of the *Telegraph's* editorial staff who is most severe upon the "old fogy doctors" that despise advertisers and will not consult with quacks, and do not believe that quinine gets into the bones, or that it is honest to pretend one thing and to practise another, would alter his opinion and the tone of his comments if he would but read the sketches of medical men in the *Daily Report* of San Francisco.

The point is simply this: A tradesman advertises his wares, but a professional man has only himself to advertise. The impropriety of such self-advertisement is obvious. We very much doubt that the editor of the *Telegraph*, or any other sane journalist, would be willing to intrust his own life, or that of any of his dear ones, to an advertising doctor.

The quack is strong, but his rule must sooner or later come to an end. A little more courage on the part of the medical press will end it sooner. Meanwhile, thanks and much power to the brave "S." of the *Pacific Medical Journal.*

AN EXHIBIT OF ROAD-MAKING AT THE COLUMBIAN EXPOSITION.

COLONEL ALBERT A. POPE, of Boston, is earnestly endeavoring to secure "a comprehensive exhibit of roads, their construction and maintenance, at the World's Columbian Exposition."

It has been alleged that bicycle manufacturers have a keen business interest in the matter, and it is doubtless true that good roads will help the bicycle business. So will they help every other business.

No class of men can have a greater interest in this question than physicians. To the discomforts and trials of a life not too full of sweetness, the wretched condition of city streets and country roads adds its full quota. Americans do many things well, and a few things badly; and among the things that they do worst is road-making. If COLONEL POPE can succeed in his effort to have at the Columbian Exposition an educational exhibit that shall attract prominent attention, and shall show what has been done elsewhere and what can be done in this country to secure good roads, he will have performed a substantial public service. The greatest difficulty to be contended with is, of course, the objectionable introduction of partisan politics into the management of public works throughout the country.

The recent exhibit by SECRETARY TRACY of the improvement attained in the navy yards since the principles of Civil Service Reform were introduced into their management is an illustration of what can be done in road-making when that shall likewise have been delivered from the control of the practical politicians and "the boys."

Of course, good roads cannot be made under any system until the principles of road-making are generally understood, and the proposed exhibit at the Chicagoan World's Fair will be an important factor in the diffusion of the knowledge of these principles. As good citizens, for the benefit of the public, and as physicians, for their own benefit and that of their patients, we would urge our readers to further the movement by every means in their power. COLONEL POPE suggests that letters to local newspapers and to members of Congress will be of material assistance.

REVIEWS.

CARDIAC OUTLINES FOR CLINICAL CLERKS AND PRACTITIONERS, AND FIRST PRINCIPLES IN THE PHYSICAL EXAMINATION OF THE HEART FOR THE BEGINNER. By WILLIAM EWART, M.D. Cantab., F.R.C.P., Physician to St. George's Hospital, etc. With sixty-two illustrations. 8vo, pp. x, 165. New York and London: G. P. Putnam's Sons, 1892.

THE study of physical diagnosis may be made to appear extremely difficult, or it may be reduced to the ulmost simplicity. Of course, a thorough knowledge of visceral anatomy is fundamentally necessary. In addition, the result will be governed by the method in which the subject is approached. The book before us affords adequate evidence of the correctness of the position here taken, and of the aid that well-written books may render in the study of practical subjects. Not only is that much of the subject with which the book has to deal presented in a clear and concise manner, but it is presented with so much interest that one is loath to put the volume aside, and one wonders why more books of the same kind are not brought forth, or rather wishes that they were. Not a little of the merit of the work belongs to the excellent and accurate illustrations. We can commend it most heartily to all that appreciate the value of careful clinical examination, and who desire to be fully and accurately and intelligently informed on a subject of incalculable aid and an indispensable adjunct in diagnosis. The merest summary of the contents of this excellent little work would carry us beyond the limits of this review. We cannot do better than refer

those interested to the original. It should go far toward stimulating the systematic practice of making careful clinical records.

A TREATISE ON BRIGHT'S DISEASE OF THE KIDNEYS: ITS PATHOLOGY, DIAGNOSIS, AND TREATMENT. WITH CHAPTERS ON THE ANATOMY OF THE KIDNEYS, ALBUMINURIA, AND THE URINARY SECRETIONS. By HENRY B. MILLARD, M.A., M.D., Fellow of the Academy of Medicine of New York, etc. With numerous original illustrations. Third edition, revised, enlarged. 8vo, pp. xviii, 322. New York: William Wood & Co., 1892.

THE author states that since the appearance of the second edition he has devoted much time to retracing former experience and adding new; and that as a result of prolonged new investigation and observation he has changed many of his former opinions and conclusions, especially with reference to the existence of what is known "as physiological albuminuria." He states in Chapter VIII, which is devoted to this subject, that the experience of Capitan and Chateaubourg, upon which he formerly relied, must now be thrown out of consideration, on account of the defects in their methods of testing, which do not exclude the possibility of mistaking mucin for albumin.

Permanent albuminuria, even if intermittent, according to Millard's latest experience, usually implies, in some way, impaired health or some latent pathologic condition.

The book maintains its reputation as a careful, systematic study of its subject, and, while we do not necessarily agree with all of the author's opinions, we must admire the clearness with which he expresses his views, and commend the generally practical character of his advice as to treatment.

USES OF WATER IN MODERN MEDICINE. By SIMON BARUCH, M.D., Attending Physician to the Manhattan General Hospital and New York Juvenile Asylum, etc. Two volumes. Pp. xv, 115; pp. viii, 228. Detroit: George S. Davis, 1892.

IN a short compass, the author, who is an acknowledged authority upon the subject, gives the rationale and the principal methods of hydro-therapeutics. While we cannot fully indorse the somewhat enthusiastic statements made, we do believe that this important subject and these important means of cure have been greatly neglected by English-speaking physicians, and Dr. Baruch deserves grateful recognition for his efforts to secure a more extended knowledge and more appreciative use of the powers of water in medical practice.

If he had done nothing else than call attention to the merits of the Brand treatment of typhoid fever he would have rendered a valuable service to the community and to the profession. We trust that each of our readers will buy and study this little work.

LE RACHITISME. Par J. COMBY, Médecin des Hôpitaux de Paris. (Bibliothèque Médicale. Charcot-Debove.) Paris: Rueff et Cie, 1892.

THIS is a most interesting as well as an attractively bound little volume of 175 pages.

Dr. Comby draws his deductions from a large practice among children. He clearly describes the malnutrition and general dyscrasia of rickets, and the digestive troubles that antedate deformities.

He draws the lines clearly as to congenital rickets, tardy rickets, osteomalacia, and osteoporosis. Very properly, he calls especial attention to the development of the disease during the age of dentition. Ignorance and poverty are the causes, not climate. The descriptions of the resultant bony deformities are good, but he fails to recognize the value of the prevention of these distortions, and he is not enthusiastic upon subsequent correction by surgical and mechanical measures. Osteoclasis is his favorite surgical procedure. Hygienically, good food, good air, salt baths, and cleanliness are the essentials. Calcicum phosphate, cod-liver oil, and phosphorus are valuable adjuncts to hygienic measures.

CORRESPONDENCE.

A UNIQUE MODE OF ADVERTISING.

To the Editor of THE MEDICAL NEWS,

SIR: The subject of this communication is suggested by a memorandum in THE MEDICAL NEWS, entitled "Copies of Advertisements Desired." For some time I have observed a scheme that is becoming more and more prominent, while its participants are multiplying in number and increasing in zeal. I refer to the indorsing of pharmaceutical preparations known as tablet-triturates, compressed tablets, or compressed pills, by prominent members of the profession.

A number of travelling salesmen call on me in the interest of their respective firms; they display their goods in an attractive array, and laud, in mercantile eloquence, the virtue, beauty, solubility, uniformity, and excellence of their wares, manufactured from the purest drugs, under the supervision of the highest commercial integrity. Preparation after preparation is presented; on examination I read on the label the name of a prominent professor of some university or medical school.

The agent insists on my purchasing the preparation because Professor —— uses it in the hospital. After declining to order the article, another bottle is produced, bearing the name of Doctor ——, who is the Chief Physician in some State Institution or Hospital.

In this characteristic manner a sale may be effected by an argument based not on the merits of the preparation, but on the name of the doctor that indorses the label, as a stamp of approval.

I am in a position to know that many of these preparations are bought and prescribed, not because of their intrinsic value, but by reason of their high indorsement, and that they are used under the name of the indorser.

Recently, during a consultation, the attending physician informed me that the patient was taking Professor ——'s triturates. Not being acquainted with the preparation under that name, I inquired what they contained, and to my astonishment the physician did not know all of the ingredients, but assured me that it was the proper thing to give, because Professor —— recommended it. Many are thus influenced to use drugs not suited to the case, and with the therapeutical value of which they are unacquainted.

It is not my object to argue in favor of or against these preparations. I only claim that, to use drugs under such a title is unscientific, while this mode of advertising is a departure from ethical consistency, if not a direct violation of the code.

Furthermore, that its influence is deleterious no one can question, and that great responsibility lies with those who engage in it.

We do not blame the trade for resorting to a measure that is so profitable, but we are forced to censure those who suffer their names to appear in every pharmaceutical catalogue, to be used as commercial instruments by anyone who chooses to appropriate them.

These compounds should not be sold over the signatures of men that occupy high places, men that we are to regard as masters in the profession, and those whose names grace the pages of medical literature.

I regret to state that I have in my possession a list of over seventy names of this superior type, all of which appear in pharmaceutical catalogues.

If these gentlemen are not aware of the fact that their names and reputations are thus misused they should be informed of the truth; and, on the other hand, if they are cognizant of the fact, and tolerate it, they are fostering an evil the influence of which is far-reaching and more potent than they imagine.

In the *Times and Register*, vol. xxiii, p. 245, I am pleased to note that Professor Da Costa repudiates the authorship of one of these preparations. It is known as "Da Costa's Heart Tonic." Professor Da Costa takes the proper position in this matter, and indicates a mode by which this evil can be combated.

H. F. SLIFER, M.D.

NORTH WALES, PA,

THE METAMORPHOSIS OF MICROÖRGANISMS.

To the Editor of THE MEDICAL NEWS,

SIR: In THE MEDICAL NEWS (May 7, 1892) William C. Braislin, of Brooklyn, N. Y., makes the statement that over fifteen years ago Professor Tyndall said, in regard to the propagation of bacteria: "No change of any isolated organism into another organism is ever observed."

Is this now an accepted fact by bacteriologists, or is there not yet some doubt about it? Has it not been proved by Naegeli that the bacterium that causes lactic-acid fermentation in milk may be changed by cultivating it in extract of meat and sugar, so that it will no longer produce a lactic but an ammoniacal decomposition in milk. And is it not the conclusion of H. C. Wood and Formad that the micrococci found in diphtheria resemble those found on furred tongues in all respects, except in their greater tendency to grow, and when cultivated successfully they lose their contagious powers and grow less rapidly. Do not these authors, therefore, consider that the common micrococcus by cultivation can be converted into a rapidly growing diphtheritic micrococcus, and by change of cultivation reverts to the common type? Most truly,

W. H. BARR.

AGRICULTURAL COLLEGE, MISS.

The foregoing letter was submitted to Dr. Abbott, who kindly replies as follows:

The statement of Tyndall related more to the constancy of morphology than to the general biologic peculiarities of bacteria, and subsequent observations have demonstrated its accuracy. There is no evidence in support of the opinion that a bacterium belonging to the family of rod-shaped organisms, the bacilli, can ever alter its shape and become constantly spherical or spiral; *i.e.*, a micrococcus or a spirillum, and *vice versâ*. The morphology of members of these different groups is constant. With the physiologic activities of the bacteria, however, the conditions are different, for an organism that, under a given set of circumstances, is concerned in the manufacture of one chemical product may, with altered surroundings, such, for example, as a different kind of nutrition, presence or absence of oxygen, alkaline or acid reaction of the medium in which it is growing, etc., generate substances of an entirely different nature chemically. In the light of more recent studies upon diphtheria there is no reason for considering either in whole or detail the work of Wood and Formad, and it is not probable that the authors themselves would to-day insist upon the acceptation of the statement made by them upon this subject so long ago. The work of Wood and Formad has never received confirmation since the time of its publication.

A. C. ABBOTT, M.D.,
First Assistant, Laboratory of Hygiene, University of Pennsylvania, Phila.

THE ADDITION OF A FIFTH RULE TO THE FOUR OF KOCH.

To the Editor of THE MEDICAL NEWS,

DEAR SIR: In the very valuable contribution which Dr. Sidney Martin, in the Gulstonian Lectures, has made to chemical pathology, of which you have given a very complete editorial review in your issue of July 9th, the learned author states that to the four rules of Koch there should now be added a fifth, namely, that "The chemical poisons must be obtained from the tissues in the natural disease, and products with a similar physiological action proved to be formed by the primary infective agents when grown outside the body."

In this connection I think that I am justified in calling attention to the following quotation (*Journal of the American Medical Association*, vol. xiii, p. 831), taken from a paper read by myself at the Newport meeting of the American Medical Association in June, 1889: "I think that it is now time for us to supplement the rules of Koch with the following, which should be insisted upon in those cases in which the lower animals are not susceptible to the action of the germ. Before any microorganism can be considered the true and sufficient cause of a given disease, it must be shown that the chemical products of that germ are capable of producing the characteristic symptoms and lesions of that disease in an acute form."

The same statement is reported in the second edition of *Ptomaïnes and Leucomaïnes* (Vaughan and Novy), 1891, pages 97–98.

In the discussion which followed the reading of my paper at Newport one of the most renowned of American bacteriologists (see page 836, vol. xii, *Journal of the American Medical Association*) protested against my proposed rule.

Now, three years later, Dr. Martin formulates the same rule. If the principle of this rule is right, America deserves the credit of first having formulated it.

Respectfully, VICTOR C. VAUGHAN.

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A SIMPLE ENDOSCOPE.

To the Editor of THE MEDICAL NEWS,

SIR: Some time since I was consulted by a young man afflicted with considerable urethral irritation, the result of a previous gonorrhea. There was no discharge, only considerable pain at the commencement of the urination, referred to the head of the penis. He had applied to various physicians and had tried various remedies without avail; the last physician had been passing bougies. As he had pretty well made the rounds of treatment, I decided to try galvanism. Accordingly, I made two applications a week by means of a urethral electrode of a sensible current, and in the course of three weeks had the irritation very much lessened; but by none of the many methods subsequently pursued could I entirely remove the pain. Finally, I succeeded by the employment of a little apparatus, which I shall endeavor to describe, and which I trust may be of service to others who may be similarly situated. Confident that there were spots of inflamed mucous membrane along the urethral tract which I had heretofore been unable to reach satisfactorily, and which had kept up this long-standing irritation, I felt the need of an endoscope with which to find them. This, however, was an instrument which I did not possess, and indeed an instrument which I fancy few do possess, except those who make a specialty of genito-urinary diseases.

Accordingly, I constructed an instrument that answered my purpose admirably. I made it of an ordinary glass "straw," such as is used for imbibing lemonade and kindred beverages, though any like medium-sized glass tube, with a round smooth extremity, would do as well. Heating this about four inches from one extremity in the flame of an alcohol-lamp, I broke off the longer portion and at the same time sealed the smaller. Holding the same part again in the flame, and at the same time gently blowing through the other end, I gradually expanded the fusing extremity into a sort of bulb. The top of this bulb I broke off, smoothing the jagged edges by slightly melting them in the flame. I now had a sort of glass funnel expanded at one extremity, and of the same caliber for three inches of its length. When next my patient came, applying a little glycerin on the outside of this homely "endoscope," I found it could easily be slipped its full length into the urethra; and by means of an ordinary head-mirror I could throw a light down to the termination of the instrument, and plainly see the condition of the mucous membrane at any point by simply slipping the glass-tube up and down. Discovering, as I expected, a number of patches of inflamed mucous membrane, I was enabled by this means to make application of various stimulating and astringent substances to these particular spots, applying even as strong as a 40 per cent. solution of silver nitrate, and in a few weeks had his long-standing irritation entirely removed.

Respectfully,

ERNEST B. SANGREE.

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CYSTOSCOPY.

To the Editor of THE MEDICAL NEWS,

SIR: In vain have I looked through the literature to learn if anyone has succeeded in viewing the whole interior of the bladder at once. The end can be accomplished by an exceedingly simple method: All that is necessary is to put the woman in such a position that the contents of the abdomen gravitate toward the diaphragm and insert Simon's well-known urethral speculum. It is possible that occasionally failure will occur. If the intra-abdominal pressure is great, as in very fat women, etc., I place the hips on the upper edge of a lounge in dorsal decubitus. I shall not dwell upon the advantages and increased possibilities of surgical action resulting from the use of the endoscope, but I expect that as good results will some day be obtained in males as are now secured in females. It seems to me that after a straight tube is introduced into the bladder with the patient in the position indicated, and a strong light thrown in, a small mirror (fastened to a wire at an angle) could be introduced, and thus the whole bladder be surveyed by turning the mirror in various directions. The shorter the tube and the greater the caliber, the better the view that ought to be had. The common urethral endoscopes are too long for this purpose, as the penis can be crowded together a great deal. Not possessing the opportunities of the post-mortem room, I would suggest that those who have such opportunities might apply the idea here expressed. The present armamentarium (Nitze, etc.) is needlessly complicated, and brings into view at one time smaller areas than would be seen in the device that I propose. If this model of a laryngeal mirror were convex, still larger areas could be seen at one time, but, of course, in reduced size. All endoscopes at present in use require the bladder to be filled with water. The method here outlined, dispensing, as it does, with the use of all fluids, would certainly command a better view of the interior of the bladder.

Respectfully, MARCELL HARTWIG.

BROOKLYN, N. Y.

NEWS ITEMS.

The American Orthopedic Association will hold its sixth annual meeting at the New York Academy of Medicine, September 20, 21, and 22, 1892. The following program has been arranged:

First Day—September 20th.

The President's Address, by Dr. Benjamin Lee, Phila.

"Report of a Case of Spontaneous Dislocation of the Hip-joint," by Dr. B. E. McKenzie, Toronto.

"Adduction following Fracture of the Neck of the Thigh bone," by Dr. H. Hodgen, St. Louis.

"Osteitis Deformans; with a Report of Two Cases," by Dr. Henry Ling Taylor, New York.

"Lateral Dislocation at the Knee-joint Due to Local Disease, or Paralysis, with Especial Reference to Treatment," by Dr. T. Halsted Myers, New York.

"Plaster-of-Paris Orthopedics," by Dr. A. J. Steele, St. Louis.

"The Orthopedic Treatment of Infantile Spinal Paralysis," by Dr. John Ridlon, Chicago.

"A Report of Two Years' Operative Work in the

Hospital for the Ruptured and Crippled," by Dr. V. P. Gibney, New York.

"Lateral Curvature," by Dr. E. H. Bradford, Boston.

"The Classification of Hip-disease," by Dr. R. W. Lovett, Boston.

"A Study of Some of the Problems in the Mechanical Treatment of Hip-joint Disease," by Dr. Newton M. Shaffer, New York.

"Experiments Demonstrating the Etiology of the Various Deformities in Hip-joint Disease," by Dr. A. M. Phelps, New York.

"Some Remarks on the Etiology of Club-foot," by Dr. Samuel Ketch, New York; discussion to be opened by Dr. J. K. Young, Philadelphia.

"At What Age Shall the First Treatment of Congenital Club-foot be Instituted?" by Dr. H. Augustus Wilson, Philadelphia; discussion to be opened by Dr. C. C. Foster, Cambridge.

Second Day—September 21st.

"The Non-operative Treatment of Congenital Club-foot," by Dr. A. B. Judson, New York.

"The Non-operative Treatment of Club-foot in Young Infants," by Dr. R. W. Lovett, Boston.

"Manual Replacement in the Treatment of Club-foot," by Dr. Ap Morgan Vance, Louisville.

"The Treatment of Club-foot by Continuous Leverage," by Dr. Henry Ling Taylor, New York.

"The Place of Traction in the Treatment of Club-foot," by Dr. Newton M. Shaffer, New York.

"The Use of the Wrench in the Treatment of Club-foot," by Mr. Robert Jones, Liverpool; discussion to be opened by Dr. A. M. Phelps, New York, and Dr. Roswell Park, Buffalo.

"The Operative Treatment of Club-foot," by Dr. De Forest Willard, Philadelphia.

"Analysis of Bone Operations in Club-foot, especially Enucleation of the Astragalus," by Dr. V. P. Gibney, New York.

"Treatment of Resistant Club-foot," by Dr. E. H. Bradford, Boston; discussion to be opened by Dr. L. A. Sayre and Dr. J. B. Bryant, New York.

Third Day—September 22d.

"An Easy Way to hold the Operated-on Club-foot in the Corrected Position while the Plaster-of-Paris Splint Sets," by Dr. H. M. Sherman, San Francisco.

"Means for the Prevention of Relapse in the Treatment of Club-foot," by Dr. B. E. McKenzie, Toronto.

"Necessity for Mechanical Treatment after Operations for Club-foot," by Dr. W. R. Townsend, New York.

"A Case of Club-foot with Rare Complications," by Dr. A. J. Steele, St. Louis.

Paper on Club-foot; title not announced; by Dr. T. Halsted Myers, New York.

Paper on Pott's Disease; title not announced; by Dr. R. H. Sayre, New York.

Paper; title not announced; by Dr. H. L. Burrell, Boston.

Paper; title not announced; by Dr. J. C. Schapps, Brooklyn.

The American Social Science Association will hold its general meeting of 1892 at Saratoga, from August 29th to September 2d.

In the Department of Education, the Secretary, Dr. Louise Fiske Bryson, of New York, will read a report on "Education as a Therapeutic Measure."

Dr. Isaac N. Kerlin, of Elwyn, Pa., will present an address on "The Training of the Mentally Defective in Childhood."

In the Department of Health, the Secretary of the department, Dr. W. D. Granger, will read a report on the "Work of the Health Department since its Organization."

Dr. Matthew D. Field, of New York, will read a paper on "The Examination and Commitment of the Public Insane in New York City."

Dr. Ralph L. Parsons, of Sing Sing, N. Y., will read a paper on "Voluntary Commitment of the Insane to Asylums."

Dr. Henry Ling Taylor, of New York, will read a paper on "American Children Hygienically Considered."

Dr. W. W. Keen, of Philadelphia, will read a paper on "The Modern Surgery of the Brain."

Dr. Frederick Peterson, of New York, will read a paper on "The Old and the New Phrenology."

In the Department of Social Economy, Dr. Annie S. Daniel, of New York, will read a paper on "Conditions Observed by a Dispensary Physician in New York in regard to the Sweating System."

BOOKS AND PAMPHLETS RECEIVED.

Expert Witnesses. By J. T. Eskridge, M.D. Reprint, 1892.

Review of the Preventive Measures taken against Kak'ke in the Imperial Navy, Tokyo.

The Operative Treatment of Goiter. By J. Collins Warren, M.D. Reprint, 1892.

Transactions of the American Dermatological Association. Official Report of the Proceedings. By George Thomas Jackson, M.D. New York, 1891.

The Treatment of Tuberculosis of Bones and Joints by Parenchymatous and Intra-articular Injections. By Nicholas Senn, Ph.D., M.D. Reprint, 1892.

Diseases of Women. A Manual of Non-surgical Gynecology, Designed Especially for the Use of Students and General Practitioners. By F. H. Davenport, A.B., M.D. Second Edition, Revised and Enlarged. Illustrated. Philadelphia: Lea Bros. & Co., 1892.

Fifty-second Annual Announcement of the Medical Department of the University of the City of New York, Session of 1892–93. New York, 1892.

Annual Announcement and Catalogue of the College of Physicians of Baltimore, Md., 1892.

Nephrotomy for Calculous Pyelitis. By W. W. Keen, M.D. Reprint, 1892.

Arterio-venous Aneurism of the Common Carotid Artery, etc. By W. W. Keen, M.D. Reprint, 1892.

Resection of the Liver. By W. W. Keen, M.D. Reprint, 1892.

The Effect of Fluids on the Strength of Catgut. By D. Braden Kyle, M.D. Reprint, 1892.

An Inquiry into the Causes Producing Cerebral Injuries in the Newborn. By J. Madison Taylor, M.D. Reprint, 1892.

Announcement of Gross Medical College, of Denver, Col. Denver: Press of Medical Times, 1892.

Twenty-eighth Report of the Trustees of the Boston City Hospital. Boston: Rockwell & Churchill, 1892.

Uses of Water in Modern Medicine. By Simon Baruch, M.D. Vol. II. (Physician's Leisure Library.) Detroit, Mich.: George S. Davis, 1892.

Materialism and Modern Physiology of the Nervous System. By William H. Thomson, M.D., LL.D. New York: G. P. Putnam's Sons, 1892.